IDG .net Column: Widely used spending metric is misleading. PAGE 35 Managers see quick savings with SANs. PAGE 38

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JULY 1, 2002 ▪ VOL. 36 ▪ NO. 27 ▪ $5/COPY

CUSTOMERS STAYING WITH WORLDCOM

Amid bad news, they resist analyst advice to flee but keep contingency plans handy

BY MICHAEL MEEHAN

FINANCIAL FAILINGS

WorldCom Inc.'s revelation of financial improprieties last week pushed it to the brink of bankruptcy and forced customers to decide what to do about their mission-critical data services.

In a statement June 24, WorldCom acknowledged that during 2001 and the first quarter of 2002, it improperly accounted for $3.8 billion in operating expenses as capital expenses. In the wake of that admission, the Securities and Exchange Commission slapped WorldCom with a fraud suit, and Nasdaq halted trading of the company's stock.

Analyst firms were quick to urge clients to terminate WorldCom service if possible or to seek backup service. Yet some customers vowed to stick with the vendor.

"Our first reaction is that the sky is not falling," said Dayne Sampson, IT vice president at Web search engine company Ask Jeeves Inc. in Emeryville, Calif.

Ask Jeeves began using a WorldCom co-location facility for its Web site last year. Sampson said Ask Jeeves has been happy with the service so far and has received assurances that its service-level agreements will continue to be met.

"If the service levels fall off, we could terminate the contract and move elsewhere, but it is our last desire to do that," Sampson said.

He added that Ask Jeeves went through a similar situa-

WorldCom, page 49

USERS LOSING BILLIONS DUE TO BUGS

Standards could reduce costs by third, study says

BY PATRICK THIBODEAU AND LINDA ROSENCRANCE
WASHINGTON

IT managers have long known that software bugs cost money, and now, thanks to a landmark federal study, they know how much: $59.5 billion a year.

Nearly two-thirds of that cost, 64%, is borne directly by end users, with developers and vendors incurring the remainder, according to a 309-page report from the National Institute of Standards and Technology, a federal agency that conducts extensive research on technology issues.

There are very few markets where "buyers are willing to accept products that they know are going to malfunction," said Gregory Tassey, the NIST se-

Bugs, page 49

SAP APPAREL APP GETS NEW PUSH

Users find once buggy tools are more stable

BY MARC L. SONGINI

SAP AG has resumed aggressively marketing its specialized applications for apparel and footwear makers after a multiyear effort to stabilize and upgrade the software, which initially was a major sore spot for SAP and its users.

Several users of the Apparel and Footwear Solution last week said they have lingering concerns about some issues, including technical support. But SAP has gone a long way toward fixing what had been a buggy and prematurely released set of applications, the users said.

So severe were the problems at first that several companies, including The Warnaco Group Inc. in New York and Sara Lee Corp.'s hosiery unit in Winston-Salem, N.C., dropped AFS projects in 1999. In response, SAP put the software on a sales hiatus and offered it to only a limited number of customers

SAP, page 16

SPECIAL REPORT

MICHAEL BARTALOS

HP ▪ IBM ▪ SUN

Where do they go from here?

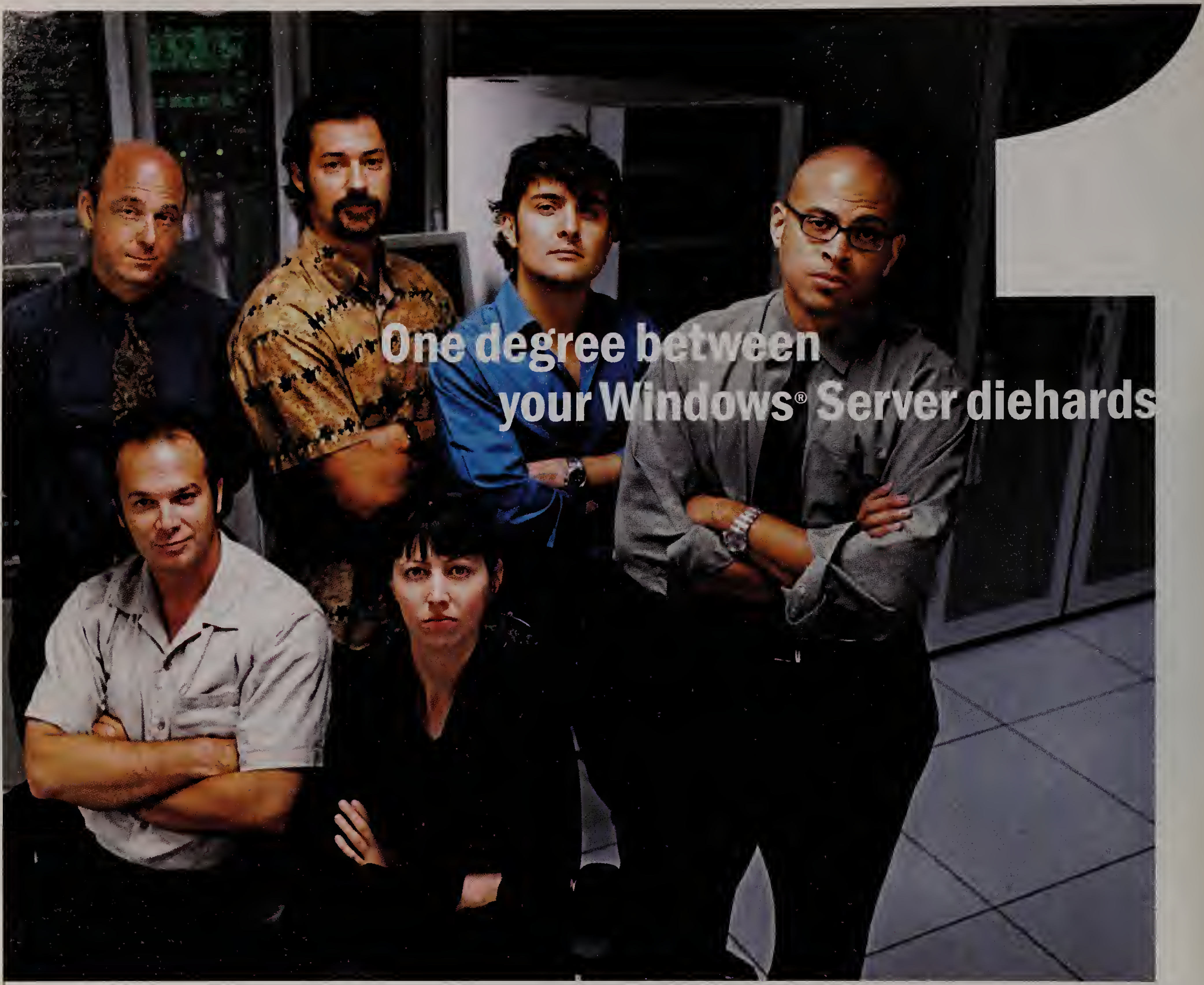
PAGE 6 Hewlett-Packard, IBM and Sun are companies in transition. With falling margins and growing commoditization on the hardware side, all three see software and services as core differentiators. Jaikumar Vijayan looks at how the companies are **thinking outside the box.**

NET PROFIT MARGINS, 1ST QUARTER 2002

HP	2.4%	A drop from previous quarter's net profit margin of 4.3%
IBM	6.4%	Down from previous quarter's net profit margin of 10.2%
SUN	*	* Hasn't posted a profit for the past four quarters

SOURCE: HOOVER'S ONLINE

NEWSPAPER



When software quickly eliminates barriers between systems, that's one degree of separation. While you may have one department standardized on one platform, you'll often have another department on a different platform. And since getting everybody to switch to the same platform could cause trouble, it's your job to make everything work together. That's where Microsoft® BizTalk® Server 2002 comes in. BizTalk Server 2002 gives you a library of over 300 adapters for popular applications, technologies, and implementations like EDI using Internet standards like XML and SOAP. In short, it lets you connect all your internal and external systems quickly and cost-efficiently, and nobody gets hurt. That's one degree of separation. That's infrastructure with .NET. Find out how .NET connected software can help you eliminate the barriers between your systems. Go to **microsoft.com/enterprise** Software for the Agile Business.

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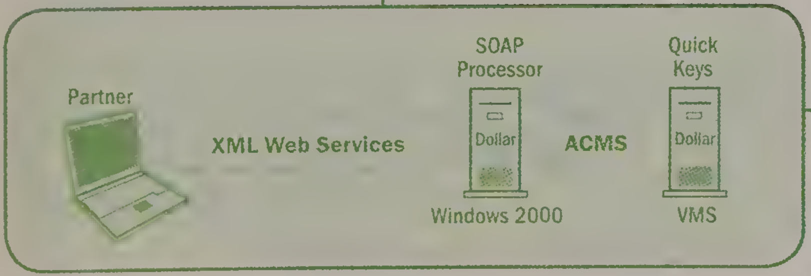
and your UNIX zealots.

Dollar Rent A Car *used BizTalk Server 2002 to create a new XML-based EDI interface in weeks rather than months, and the solution in turn reduced the development time required for connecting to each new business partner by 75 percent. The BizTalk Server implementation also helped the company to significantly reduce transaction costs with its partners.*



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FERRUCCIO SARDELLA

RULES OF ENGAGEMENT

No more helter-skelter use of contractors. Smart managers are reviewing how and when to use such workers to their strategic advantage. **PAGE 36**

FIELD REPORT: TECHNOLOGY FOR REMOTE WORKERS

When setting up and supporting remote workers, corporations face two big issues: the security threats posed by vulnerable home computing systems, and sorting out the connectivity options.
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JULY 1, 2002

COMPUTERWORLD THIS WEEK

NEWS 6

6 Special Report: Three bellwether hardware companies — Hewlett-Packard, IBM and Sun — take separate routes to the software and services promised land, away from the scourge of low margins and commoditization.

8 Oracle promises to release a pricing guide this summer to clear up confusion about its software licensing policies.

10 CPFR is once again the buzz at the annual Retail Systems Conference, but retailers agree that widespread adoption of the collaborative supply chain technology is still years away.

14 IBM abandons its strategy of independently developing iSCSI storage products, opting to go the partnering route instead.

BREAKING NEWS

For breaking news, updated twice daily, visit:
QuickLink: a1510
www.computerworld.com

TECHNOLOGY 23

23 Proposed laws that would make software vendors liable for damage caused by security flaws in their products are good news for open-source proponents, says columnist Nicholas Petreley.

30 Apple's Mac OS X may make it into the enterprise as it combines reliability with a user interface that can save time in server configuration and support.

31 QuickStudy: Decision-support systems are interactive, computer-based tools used to answer questions, solve problems and test conclusions.

32 Hands On: A 2-lb. projector and a PDA slide-show accessory let road warriors leave their laptops at home, says reviews editor Russell Kay.

33 Security Journal: After losing two members of his security team, Mathias Thurman takes on additional responsibilities.

MANAGEMENT 35

35 Paul A. Strassmann says IT leaders shouldn't put too much stock in the commonly used IT-spending-to-corporate-revenue metric.

38 SANs may cost more upfront than other storage technologies, but experts say savings are almost guaranteed — and fast.

39 IT volunteers gain skills and experience, but rarely do such efforts lead to new jobs that can pay the bills.

43 Hit the beach with one of the eight new IT and business books we've reviewed for our annual summer reading list.

44 Career Adviser Fran Quittel offers advice to a programmer/systems administrator about the potential for a career built around Linux on mainframes. She also counsels an experienced programmer who has added Visual Basic to his list of skills.

OPINIONS 20

20 Mark Hall says that while Microsoft awaits the next court decision in its antitrust case, the marketplace is preparing a more damaging judgment of the company.

20 Pimm Fox writes that new management tools will be necessary as the J2EE development environment becomes more complex.

21 David Foote thinks that Washington's homeland security initiatives will trickle down into the private sector, meaning that you'll pay, one way or another.

50 Frank Hayes wonders if IT cares that, according to a federal study, software errors cost U.S. users nearly $60 billion per year, much of which could be saved through "feasible improvements" in testing.

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ONLINE

TO BE A CONTRACTOR

Two IT professionals talk about the pros and cons of earning a living as a contractor.
QuickLink: 30892

A WORTHY PEN PAL?

Do you think tablet PCs will play a role in general business computing? Or are they best suited for niche applications? Post your opinions and read what others have to say in our online discussion forum.
QuickLink: a2260

U.S. PRIVACY MODEL POISED TO PREVAIL

Europe raised the profile of privacy as a right, but the U.S. model of privacy law will dominate because it's simple, practical and market-driven, writes privacy columnist Jay Cline.
QuickLink: 30901

WHAT'S A QUICKLINK?

On some pages in this issue, you'll see a QuickLink code pointing to additional, related content on our Web site. Just enter that code into our QuickLink box online, which you'll see at the top of each page on our site.

Use QuickLinks to see related stories, discussion forums, research links, archives and more.

Thinking Outside the Box

HP, IBM and Sun are taking different routes to the same destination – a place where hardware is no longer the only measure of their technological prowess or the generator of financial strength.

BY JAIKUMAR VIJAYAN

THEY ARE the leaders in supplying the hardware that powers the world's information infrastructure. And now all three are turning to software and services to boost margins and growth amid the declining demand for and the growing commoditization of their core technology products.

But IBM, Sun Microsystems Inc. and Hewlett-Packard Co. have recently articulated widely differing strategies for just how they intend to do that.

The Hardware Slump

Worldwide server revenue declined 19% from 2000 to 2001.

IBM	
2000	**23%** (of a $61B market)
2001	**28%** (of a $50B market)
GROWTH	**-1%**
HP	
2000	**15%**
2001	**16%**
GROWTH	**-20%**
Sun	
2000	**17%**
2001	**14%**
GROWTH	**-33%**

SOURCE: IDC, FRAMINGHAM, MASS.

Today, for instance, Sun is launching a software organization that unites its enterprise software development and software products groups. Sun sees Java-enabled Web services as the area where it can add the most value with its Sun Open Net Environment (Sun ONE) software suite, and it's hoping that the new organization will give it the needed focus.

HP - IBM - SUN

HP's software strategy, as expounded at last week's HP Software Forum in Seattle, is to help customers manage a heterogeneous infrastructure using its OpenView software suite. The company sees its biggest opportunity in helping service providers and service-oriented IT shops automate and manage key processes such as service delivery, service assurance, billing and usage.

IBM sees gold in the application and business integration hills, which it says represents the most daunting challenge facing IT shops. Through its huge Global Services organization, the company aims to use its Lotus, DB2, WebSphere and Tivoli software and middleware products to help customers integrate applications, data sources, user interfaces and business processes.

The challenge for all three vendors is to present a coherent vision of those strategies to users who have yet to be convinced of their merits.

Indeed, some users, such as Matt Kesner, chief technology officer at San Francisco-based law firm Fenwick & West LLC, have difficulty seeing the value that hardware vendors bring to the software space. "We've been approached by the consulting teams of HP, IBM and Sun, and frankly, we haven't yet found a lot of value in what they have to sell to us," Kesner said.

In Need of a Differentiator

But almost everyone agrees that hardware vendors are going to have to think beyond the box if they want to sustain long-term growth.

The big hardware makers recognize "that you can't make money off selling commodity devices," said Clyde Poole, vice president of the Encompass Compaq user group and a product manager at Tecsys development in Plano, Texas. "Buying decisions [are] less about the underlying architecture and are being driven more by the total cost of ownership" of a vendor's offering, he said.

With core technology becoming less of a differentiator, software, services and integration become crucial avenues for adding value, said Terry Shannon, editor of "Shannon Knows HP," an Ashland, Mass.-based newsletter.

"That's the mantra IBM has pitched successfully for quite some time," Shannon said. "Big vendors can't generate margins by being just an Intel or Microsoft reseller."

FACTOID

82.5%

The profit margin IBM enjoys in its software business.

After years of frenetic growth, hardware sales have flat-lined. The seemingly insatiable demand for capacity generated by Y2k remediation efforts and the dot-com boom have petered out. Now hardware vendors are predicting a period characterized by cautious demand, lower margins and commoditization.

Software and services, in contrast, offer better margins and opportunities for growth. IBM last year generated $13 billion in software revenue at a profit margin of 82.5%. Services, especially at the high end, can typically yield profits of 30% to 40%.

The middleware market in particular, which both Sun and IBM are going after, is poised to take off. Stamford, Conn.-based Gartner Inc. predicts that the worldwide application integration, middleware and portal markets will grow from $5.1 billion in 2001 to $10.5 billion in 2006 as companies seek to cut costs and streamline processes.

One-Stop Shopping

IBM, which is far ahead of HP and Sun in moving to a services model, is positioning itself as a one-stop technology and services shop for application integration projects.

Products such as Lotus messaging and collaboration software, DB2 database software and Tivoli systems management software have been stress-tested in enterprise environments for years. And IBM's WebSphere has emerged as a leader in its class, along with BEA Systems Inc.'s WebLogic application server.

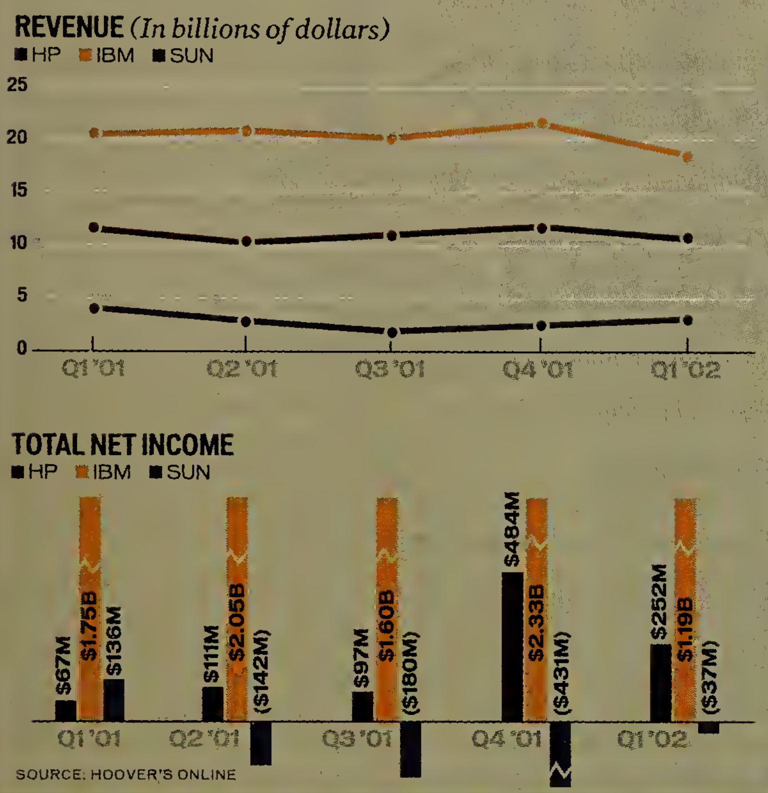
While other vendors focus on individual pieces of the integration puzzle, such as

> “WHAT DIFFERENTIATES THE SUN ONE STACK FROM THE COMPETITION IS THE **MIDDLE GROUND**. . . . WITH IBM, YOU HAVE A WHOLE RANGE OF SOLUTIONS THAT YOU ARE GOING TO NEED SOMEBODY TO INTEGRATE.
>
> SIMON PHIPPS, CHIEF TECHNOLOGY EVANGELIST, SUN

> “OUR CUSTOMERS ARE BECOMING **MORE HETEROGENEOUS, NOT LESS.** THE DIFFERENCE IN OUR APPROACH IS THAT WE ARE NOT FOCUSED ON J2EE OR .NET IN TERMS OF INTEROPERABILITY.
>
> NORA DENZEL, SENIOR VICE PRESIDENT, HP'S SOFTWARE GROUP

> “**INTEGRATION** HAPPENS AT MULTIPLE LEVELS. IT IS NOT ONLY ABOUT APPLICATION INTEGRATION OR MESSAGING OR USER INTERFACES OR SINGLE SIGN-ON.
>
> AMBUJ GOYAL, GENERAL MANAGER, IBM'S SOFTWARE GROUP

Quarterly Financials



SOURCE: HOOVER'S ONLINE

application integration or portal integration, IBM wants to do it all, said Ambuj Goyal, a general manager in IBM's software group.

"Integration happens at multiple levels. It is not only about application integration or messaging or user interfaces or single sign-on," Goyal said.

It's a compelling argument for some users. Kaiser Permanente's e-commerce subsidiary, Caretouch Inc., turned to IBM to do all of its initial back-end database and application server integration work because of the sheer range of capabilities to choose from, said Prasuna Dornadula, the company's CTO.

"We had 85 days to bring the site up live. There's no way we would have been able to do it if we had to go to multiple vendors," Dornadula said.

Ironically, one of IBM's biggest challenges will be to reassure customers who are concerned that using its stem-to-stern technologies, however standards-based they may be, would lock them into a Big Blue environment, analysts said.

A Modular Approach

Sun's strategy, meanwhile, is to enable Web services by giving users "integratable" Java-based building blocks for tying applications and services together, said Simon Phipps, Sun's chief technology evangelist.

Sun wants to use Java and open standards to enable companies to tie together applications inside the firewall and help them extend their internal networks to outside partners, suppliers and customers. Instead of delivering service to the desktop, Sun says it wants to enable a new generation of services-on-demand that can be delivered on the Web and accessed by a wide range of client devices, including desktops, handhelds and cell phones.

Unlike IBM, which wants to do it all, Sun is content to have users get just the piece they want and integrate it into their environments, said Phipps.

"What differentiates the Sun ONE stack from the competition is the middle ground," Phipps said. "At one extremity, you have a company like Microsoft, where if you buy into any part of their solution, you have no choice but to buy the whole solution. With IBM, you have a whole range of solutions that you are going to need somebody to integrate," he said.

Sun's claim that it's more open than other vendors is resonating well with some users. Consolidated Freightways Inc. in Vancouver, Wash., chose Sun over IBM a year or so ago when the company was looking for a vendor to help it build an e-commerce site.

Consolidated wanted a vendor that could supply an "integrated hardware and software package as much as possible," said Larry Brown, chief IT architect at Consolidated. In almost every respect, IBM with its WebSphere software and Sun with Sun ONE were equally matched. But Consolidated chose Sun because it offered "a little more maneuverability than IBM" in terms of being able to switch vendors if it came to that, Brown said. And the fact that Sun was cheaper didn't hurt.

Changing Users' Perception

Sun's plan is certainly not lacking in vision, analysts say. And it has an impressive and growing array of products in its Sun ONE arsenal, including a directory server, a portal server, an application server, an identity management server and a common development environment. By enabling its Sun ONE application server to run on Solaris, Linux, Windows, AIX and HP-UX, Sun is making sure its technology can be used in mixed environments.

Sun's key challenge, however, is to get users to take it seriously as a software vendor outside of the Solaris space.

"Sun still seems very much tied to being a hardware provider," said Rich Partridge, an analyst at Port Chester, N.Y.-based D.H. Brown Associates Inc.

Despite championing Java, Sun has failed to make much money off the technology. In the application server market, which is going to be crucial to Sun's efforts, the company lags a distant third behind IBM and BEA, which together hold nearly 70% of the market share.

HP, meanwhile, is more focused on quality of service and on enabling the delivery of computing resources as a utility. The linchpin in HP's strategy is its OpenView suite, which includes software for a wide range of applications, including order entry management, service activation, service-level agreement management, inventory management, usage mediation and billing services.

Capabilities such as these are crucial for organizations looking for a more service-centric view of their infrastructure, said Joseph Maloney, a vice president at Hughes Network Systems, a Germantown, Md.-based provider of broadband satellite network services.

Hughes is using HP's OpenView to manage its Direcway content delivery services to commercial customers and consumers. What sets OpenView apart from the others is the sheer breadth of functions and the service-oriented view it provides of the infrastructure, Maloney said.

But unlike IBM and Sun, HP seems to be gravitating more toward partners to deliver other parts of the middleware and software stack.

Just last week, HP announced a partnership with BEA under which the two companies will jointly market and deliver integrated application server software across all operating systems supported by HP.

"Our customers are becoming more heterogeneous, not less," said Nora Denzel, senior vice president of HP's software group. "I think the difference in our approach is that we are not focused on J2EE or .Net in terms of interoperability," she said, adding that instead, HP will focus on enabling customers to manage both environments better.

What's crucial for users is that the vendors don't try to use hardware to tie them to software like they did in the old mainframe days.

Consolidated's Brown said he appreciates vendor efforts to provide more integrated hardware and software capabilities.

"[But] we want to be in a position where if we find there's a compelling reason to switch to another vendor, we could do it in the blink of an eye," he said. ◗

Reporter Matt Hamblen contributed to this story.

Three Different Paths, Same Destination

VENDOR	FOCUS	DIFFERENTIATORS
IBM	Integration (application, data services, user interfaces, business processes)	Range of products and support capabilities
Sun	Java-based Web services	Open, standards-based, easy to integrate
HP	Integrated service management	Service-oriented management of mixed environments

Services Revenue *(In billions)*

	1999	2000	PERCENTAGE CHANGE
IBM	$32.2	$33.1	3.1%
Hewlett-Packard	$6.2	$7.3	18.4%
Compaq Computer	$7	$6.7	-5.1%
Sun Microsystems	$1.7	$2.8	61.9%

NOTE: 2001 TOTALS NOT AVAILABLE
SOURCE: GARTNER INC., STAMFORD, CONN

THE COMPAQ CONNECTION

With its acquisition of Compaq Computer, HP gained a formidable services operation

QuickLink: 31033
www.computerworld.com

AT DEADLINE

KPMG Hires Staffers From Andersen

KPMG Consulting Inc. has decided to hire en masse the staff of Chicago-based Andersen's business and IT consulting unit instead of acquiring the unit itself, apparently in order to shield itself from legal liabilities. The agreement, which is expected to become final this month, calls for McLean, Va.-based KPMG Consulting to pay $63 million for the employees. The new hires could pump about $65 million into KPMG Consulting's net revenue in the quarter closing in September, the company said.

Xerox Acknowledges Income Irregularities

Xerox Corp. said last week that it will have to restate its earnings for 1997 to 2001 due to accounting irregularities. The move will reduce the company's pretax income for that period by $1.4 billion. As a result of the restatement, 1997 to 2001 revenue has been reduced by 2% to $91 billion, the Stamford, Conn.-based company said.

ICANN Approves Blueprint for Reform

The board of directors of the Internet Corporation for Assigned Names and Numbers (ICANN) voted unanimously on Friday to approve a proposed blueprint for reforming and reorganizing the nonprofit group, which oversees basic technical matters related to the Internet.

Short Takes

MICROSOFT CORP. announced that TARGET CORP. and ROYAL CARIBBEAN INTERNATIONAL will use its Windows XP Embedded operating system in their retail point-of-sale devices. . . . In China, meanwhile, Microsoft signed a memorandum of understanding to invest $750 million in China's software industry over the next three years.

Oracle to Clarify Pricing Policies

Vendor offers explanations, but users would prefer changes to irksome licensing plans

BY JORIS EVERS
COPENHAGEN

ORACLE CORP.'S top software licensing executive last week said the company plans to release a pricing guide this summer in an attempt to clear up confusion among users about its licensing policies.

"We are in the process of creating a software investment guide that talks about all of our licensing policies. There is not enough information out there," said Jacqueline Woods, vice president of global pricing and licensing strategy at Oracle. The guide is due late this month or in early August, Woods said during a session at the company's European OracleWorld conference here.

However, an Oracle spokeswoman said afterward that the software licensing guide won't include any changes in the vendor's pricing policies.

Oracle's licensing policies have been the subject of considerable discussion this year. The company announced new flat-fee pricing on its business applications in January but then said users had to spend at least $250,000 to qualify [QuickLink: 26912].

In March, Oracle was accused of trying to play hardball with some of its database customers over a clause in its named-user contracts. The company defended its terms, but its database sales tactics were criticized by analysts at both Meta Group Inc. and Gartner Inc. [QuickLink: 28298].

The Third Degree

At last week's conference, Woods answered numerous questions about Oracle's licensing policies. For example, some attendees asked whether the processor-based database licensing Oracle announced in June last year requires them to buy full licenses if the software is to be used on backup or standby servers within a cluster or on systems in which some CPUs are segmented from others via software.

In all those instances, users would have to buy licenses based on the total number of CPUs in the systems, Woods said. The issue "is something we are looking at, and we are aware of customer questions," she added. But for now, users have to completely disconnect a backup system from their main server if they don't want to pay full price for the database, Woods said.

That wasn't the answer some users were looking for. "I would not be able to convince my company to pay fully for two machines if one of them is only meant as a backup," said one attendee who asked not to be named.

Users could avoid having to buy database licenses for all the processors in a server by partitioning some CPUs so they can't run the software, Woods said. Unix systems from vendors such as Sun Microsystems Inc. and Hewlett-Packard Co. support that kind of segmentation, she said. ◗

Evers writes for the IDG News Service.

Lotus Looks to Deep-Six Spam With Domino Upgrade

But users could take performance hit

BY JENNIFER DISABATINO

IBM's Lotus Software Group unit last week said that the next version of its Notes/Domino e-mail and collaboration software will include server-side tools designed to stop spam messages before they hit end-user mailboxes.

Ed Brill, an IBM software operations manager, said Domino 6 will include a set of antispam tools, plus the ability to automatically block e-mail from suspect IP addresses, such as those placed on the Realtime Blackhole List maintained by Mail Abuse Prevention System LLC (MAPS) in Redwood City, Calif.

MAPS, a not-for-profit group run primarily by volunteers, vets complaints about unsolicited bulk commercial e-mail. Companies and Internet service providers can subscribe to MAPS's list and set blocks so their servers won't accept e-mail messages coming from the specified IP addresses.

Users can set filters in the R5 version of Lotus Notes client software so that an e-mail that includes the phrase "make money fast," for example, will be routed to a folder designated for spam. Brill said Domino 6 will be able to block messages at corporate e-mail gateways, reducing the amount of spam traffic that reaches networks, servers and PCs.

The Domino upgrade, which is due out in September along with Notes 6, will also include scripts that e-mail administrators can use to set message-filtering rules (see box).

Just Go Away

Domino 6 will include the following antispam capabilities:

SYSTEM RULES that let IT administrators filter all incoming mail messages based on their content

PRECONFIGURED FILTERING SCRIPTS to which other suspect words and phrases can be added

THE ABILITY TO BLOCK messages from IP addresses that belong to known spammers

IMPROVED SUPPORT for using Domino's directory to stop spam from being routed throughout a company

But there's a possible trade-off. Brill acknowledged that having the filters on the server side might make it take longer for legitimate e-mail messages to pass through routers and get to in-boxes. But he didn't specify how much of a performance hit users might experience.

A spokesman for Microsoft Corp., Lotus' main rival in the messaging software market, said Microsoft mostly relies on third-party vendors that offer filtering products for Exchange users.

And even Lotus will continue to lean on partners for some of the more sophisticated spam-filtering technology after Domino 6 ships, Brill said.

Matt Cain, an analyst at Meta Group Inc. in Stamford, Conn., said any improvement in antispam capabilities is a good thing for users. But the antispam technology being added to Domino "is not state-of-the-art," he said.

Compared with some of the specialized, third-party antispam software now available, Cain added, what Lotus plans "is in the same league, but it won't win on feature function." For example, other tools can identify spam signatures and allow users to stop a blast of e-mail messages sent from an IP address that hasn't already been blocked, he said. ◗

FAQ

Frequently asked question / *abbrev:* **FAQ**

It's the question we hear most frequently: how can you leverage your investment in existing infrastructure but not miss out on the benefits of new technology? Answer: The Sprint network boasts seamless interoperability between IP, frame relay and ATM platforms — just what you need to help take advantage of current systems while migrating to new technology.

Anytime to virtually anywhere connectivity
We're the only telecommunications provider that supports both nationwide wireless and wireline access to your critical data applications. We can help you integrate wireline IP services with the latest wireless always-on, real-time mobile data solutions. The result? Try higher productivity with access to your data anytime you need it — in the office or on the road.

"Any to any" connectivity
We've also engineered a network solution that marries the "any to any" connectivity of IP to the reliability and security of frame relay. It's called Internet Protocol Intelligent Frame Relay (let's just call it IPiFR), and it's based on a flexible router architecture that can run over multiple backbone technologies — a domestic industry first. What this can give you is VPN services that (1) provide meshed connectivity (2) without multiple PVCs (3) while maintaining predictable scalability. In other words: you can add locations and new applications without replacing your existing infrastructure or adding significant costs.

Get more from existing technology and get ready for the latest — another sign of an intelligent network and the people who make it work (for you).

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CPFR Clamor Persists, but Adoption Remains Slow

Tests show supply chain benefits, hurdles

BY CAROL SLIWA
CHICAGO

THE FACT THAT one retail executive felt compelled last week to issue a public challenge for his industry peers to push collaborative planning, forecasting and replenishment (CPFR) at their companies was a telling statement about its slow progress.

The term *CPFR* — which refers to a collaborative business process for improving supply chain efficiency — made its debut six years ago at the annual Retail Systems Conference and Exposition, according to those involved in its introduction. Although interest in CPFR is high and experts predict that it will be pervasive, pilot projects remain far more plentiful than large-scale implementations, and scores of retailers haven't begun to implement CPFR, various industry sources and analysts said.

"I'm losing patience with CPFR in terms of getting it going," Tom Cole, chairman of New York-based Federated Logistics, Operations, Store Planning and Systems, told attendees of this year's Retail Systems conference. Federated Logistics is a division of Cincinnati-based Federated Department Stores Inc.

Cole's disappointment extended to his own company, which he said has just one serious CPFR pilot in the works with Liz Claiborne Inc.

"When we sit here and talk about it amongst all these people, we have to realize it's not a success," Cole said. "It's still an idea."

Boston-based AMR Research Inc. estimates that 45 to 65 retailers and 100 to 150 manufacturers are piloting or implementing some form of CPFR. Some are doing projects with multiple trading partners, but no company is where it would eventually like to be.

Cincinnati-based Procter & Gamble Co., for instance, was one of the earliest adopters of CPFR and is doing collaborative planning with hundreds of retailers, according to Milan Turk, the company's director of customer e-business. But in order for Procter & Gamble to reach the sort of critical mass that will impact its production cycles, it will need to have roughly 12 of those retailers performing full CPFR with the company, he said. "That's two to three years away," Turk said.

That's not to say that the early adopters aren't seeing benefits. A study commissioned by the Grocery Manufacturers of America that was unveiled in its full form for the first time last week showed that those that have done CPFR pilots noted improved relationships with their trading partners as the No. 1 benefit (see chart). Interestingly, improving forecast accuracy, which many had anticipated would be the primary benefit, ranked fifth.

Stephen David, CIO at Procter & Gamble, said his firm and its retailer customers are seeing good results, but industry adoption has been slower than he would like. "People are starting to realize that you're not going to do full CPFR with every retailer-supplier relationship, and the most important part is working on the collaborative portion of this," he said.

The reasons why some firms haven't undertaken CPFR are plentiful, ranging from fears about costs, time and staffing requirements to the lack of good tools. Some simply have to get their houses in order before they take the plunge.

Brian Kilcourse, CIO at Longs Drug Stores Corp. in Walnut Creek, Calif., said his firm hasn't commenced CPFR because it's putting in new supply chain systems. He said Longs plans to do CPFR once those are in place, but that could take another three years.

Kilcourse noted that with various legacy systems in place, it's very difficult to put together solid, reliable data in a way that makes sense to the trading partners you're trying to share it with. "Once we do that, then we have to have the human processes in place to truly collaborate," he noted.

One of the biggest impediment to mass adoption is the issue of trust. Many retailers, competitive by nature, continue to be reluctant to do the kind of data sharing that CPFR requires. "Traditionally, it's been hard to elicit the type of detailed data you need to build a real, heavy-duty collaborative process or planning process," said Paul Lanham, chief technology officer at Jones Apparel Group Inc. in Bristol, Pa. "And we're just at the baby steps of executing some of those front-end agreements." ◗

CPFR Benefits

57%	Improved relationship with trading partners
38%	Increased service levels
38%	Reduced stock outages
38%	Increased sales
29%	Decreased inventory
29%	Forecast accuracy
24%	Improved internal communications
14%	Better asset utilization

SOURCE: GROCERY MANUFACTURERS OF AMERICA 2001 SURVEY OF 21 COMPANIES WITH CPFR EXPERIENCE

Retailers Buzz About Potential of Radio Tags in Supply Chain

CHICAGO

Affixing tags embedded with tiny chips and antennas onto bluejeans and shirts so the apparel can be tracked from distribution center to store shelves may sound futuristic.

But at last week's Retail Systems 2002 conference here, San Francisco-based Gap Inc. discussed the potential for radio frequency identification (RFID) technology to help retailers gain greater visibility into their supply chains. Gap conducted a three-month exploratory pilot project late last year.

"We wanted to see, is it a real thing or is it hype?" said Neco Can, director of Gap's project management office. "The technology works. It gives us unit-level visibility without seeing the unit. And if I know where my goods are, I can make much better decisions."

Unlike products stamped with bar codes, which must be read by devices within their line of sight, items equipped with RFID tags can be read even when they're sitting in corrugated crates.

Now that the tags are becoming cheaper, they're becoming a viable option for retailers to consider.

Among the big players, Wal-Mart Stores Inc. in Bentonville, Ark., has conducted field trials, and rival Target Corp. in Minneapolis is planning a pilot project this summer, possibly with frozen food, CIO Paul Singer said. Singer, whose presentation on RFID packed a sizable room at last week's retail conference, said his company's tests will be done in cooperation with MIT's 3-year-old Auto-ID Center.

The Auto-ID Center now has more than 50 global sponsor companies, including The Gillette Co., Procter & Gamble, The Coca-Cola Co., Johnson & Johnson, Pfizer Inc., Unilever, United Parcel Service Inc. and Wal-Mart. Its mission is to design, build, test and deploy the infrastructure necessary to make any unique object identifiable to any computer in the world.

The organization, in conjunction with the Uniform Code Council and EAN International, is working on the development of an electronic product code that can be built into an RFID tag and carry unique identifying information for any object, such as style, color, size and serial number.

Peter Abell, an analyst at AMR Research, said the tag's chip cost typically ranges from 20 cents to 75 cents, but some manufacturers predict a 5-cent chip, perhaps as soon as summer's end.

Some retailers said the cost would need to drop to 3 cents or even a penny before they would consider using the technology. But their interest is clearly starting to be piqued now that progress is being made.

Can said Gap's exploration of RFID technology was expensive, as any pilot project can be. Not only was the hardware more costly than it is now, but his firm also had to develop two custom applications to convert the RFID tag data to a format that can be used by other systems.

Can said he's now seeing off-the-shelf middleware from companies such as DataBrothers Inc. in Fairfield, Ohio. And at least one major consultancy, Accenture, is showing an increasing level of interest in helping retailers adopt RFID, he said. "This technology does what we want. The problem is, until there's more acceptance of RFID, the cost will not come down," he said.

Can noted that retailers who try RFID will find myriad potential benefits. Gap, for instance, gained an increase in data accuracy during its pilot, he said. Other potential benefits include prevention of theft and fraud, improved customer service, reduced instances of items going out of stock, speedier product delivery and even stores without checkout counters.

"In order to cost-justify a project like this, you have to look at it throughout the supply chain, because one single line item may not by itself justify the project. Just loss prevention or inventory management might not do it," Can said.

– Carol Sliwa

MORE THIS ISSUE
Read about the latest version of SAP's mySAP Retail suite. Page 16

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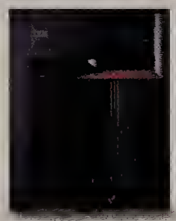	**Midrange / iSeries™** Brings easy-to-deploy, plug and play e-business to your business. Sophisticated technology that's easy to manage and Linux ready.
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BRIEFS

Microsoft Announces New Vulnerabilities

Microsoft Corp. urged users of its Commerce Server software to install a new patch designed to fix four security flaws that could allow attackers to run malicious code on unprotected systems. All of the vulnerabilities affect Commerce Server 2000, while one also applies to Commerce Server 2002. Microsoft assigned its maximum severity rating to the security holes.

Wyly Begins New Attack on CA Board

Investor Sam Wyly began a second bid to oust the top executives at Computer Associates International Inc. from the company's board, after failing to do so last year. Ranger Governance Ltd., Wyly's Dallas-based firm, proposed a slate of five alternative directors in advance of CA's Aug. 28 annual meeting. Islandia, N.Y.-based CA said it plans to oppose all of Wyly's nominees.

Deutsche Bank Trims IT Outsourcing List

Deutsche Bank AG said it has narrowed the list of candidates for a big IT outsourcing contract to IBM and Computer Science Corp.'s German subsidiary. The Frankfurt-based bank said it expects to pick one of the two companies by the end of September. The deal will involve management of the bank's main data centers and smaller server sites located throughout Europe.

Short Takes

Paris-based consulting firm **CAP GEMINI ERNST & YOUNG** said it's laying off 2,500 workers now and may cut another 3,000 employees by year's end. . . . **DIGEX INC.**, a Laurel, Md.-based Web hosting firm that's majority-owned by **WORLDCOM INC.**, announced a 7% workforce cutback just one week after naming a new CEO.

IBM iSCSI Strategy Moves To Technology Partnerships

Company sours on building iSCSI boxes after tepid sales of 200i RAID arrays

BY LUCAS MEARIAN

AFTER DISMAL sales of its first such product, IBM said last week that it's no longer pursuing a strategy of independently developing native disk arrays using SCSI over IP, or iSCSI. Instead, IBM will pursue partnership agreements that will allow its existing midrange and high-end arrays to use the emerging standard via other vendors' gateway devices.

IBM said it was kicking the proverbial tires with its first iSCSI native product — the low-end 200i RAID array — in anticipation of the protocol being finalized as a specification by the Internet Engineering Task Force (IETF) sometime late this summer.

Since the introduction of the 200i a year ago, IBM has sold fewer than 500 of the arrays, industry experts said. IBM wouldn't verify the number.

Jamie Gruener, an analyst at The Yankee Group in Boston, applauded IBM's early entry into the iSCSI market but said there was no support from other vendors and only about a $50 million market for all iSCSI devices this year.

"It's almost as though they've gone to dinner and they're waiting for the rest of the party," he said.

But IBM officials said they will continue to sell the 200i. They said the entry-level product helped them gain insights into what their customers want, and those insights are leading them down a new path.

"The [customer] requirements weren't really about iSCSI. They were about bringing characteristics that already exist in our other platforms into a platform that was basically developed as a specific iSCSI product," said Paul Mattson, manager for IP storage-area networks at IBM's Storage Systems Group.

IBM customers said they want more sophistication in their iSCSI-capable arrays, including dynamic logical unit number management and no single points of failure. The latter means arrays must have two-node controllers with dual cabling all the way through — something IBM has in its midrange Fibre Array Storage Technology storage servers and high-end Shark Enterprise Storage Server, Mattson said.

"That means you begin deploying a strategy around iSCSI as a protocol as opposed to iSCSI as a box," he said.

IBM said it's building partnership agreements with vendors such as Cisco Systems Inc. and Nishan Systems Inc. in San Jose through its TotalStorage Proven program. Nishan and Cisco sell routers and switches, respectively, that encapsulate SCSI commands in IP packets for transport over Ethernet intranets.

IBM is also working on agreements with companies like Emulex Corp. in Costa Mesa, Calif., and Adaptec Inc. in Milpitas, Calif., which produce IP-based host bus adapters and network interface cards that offload the TCP/IP stack from a server's CPU. Processing the TCP/IP eats up most of a server's CPU cycles.

"So instead of having an iSCSI product line, you'd have a broad-based storage line where there's a check box at the bottom saying, 'What fabric do you want this to operate on today?' " Mattson said. ◗

AT A GLANCE

The following are necessary for faster iSCSI deployment:

A REQUEST FOR COMMENTS from the IETF on an iSCSI preliminary specification due out in August

WIDE AVAILABILITY of network interface cards or host bus adapters that offload the TCP/IP stack from server CPUs

MORE PARTNERSHIPS that allow the exchange of application programming interfaces so gateway devices can interoperate with servers and storage arrays

AN ECONOMY that will allow firms to experiment with technologies such as iSCSI

Storage Start-up Pushes Big, But Expensive, NAS Box

System supports up to 200TB of data

BY LUCAS MEARIAN

A storage technology start-up has found a potential, though expensive, answer to the problem of users buying file server after file server in order to keep up with an explosion of data: It built a really, really big file server.

Fremont, Calif-based Zambeel Inc. last week announced the release of its Aztera system, which is positioned as a one-size-fits-all network-attached storage (NAS) box that can scale up to 200TB and handle the storage needs of multiple workgroups or business units within a company.

Aztera is based on a switched architecture and includes 10 computer read/write heads that can be assigned to different departments in a company based on their needs.

"If you want to be twice as fast, you just assign two heads," said Darren Thomas, Zambeel's president. "A file system can span across all our heads or as few as you want, and we can change to make a file system larger or smaller in capacity and performance."

For example, a company could use Aztera to set up multiple domains offering high bandwidth and secured access for an engineering source code repository, moderate bandwidth for access to sales support data and other internal corporate information and low bandwidth for public access to a Web site.

Aztera currently can be used with Unix and Linux servers and will eventually be able to run on Windows systems, although Zambeel didn't disclose a specific time frame for adding Windows support.

Nancy Marrone, an analyst at Enterprise Storage Group Inc. in Milford, Mass., said Zambeel's product is unique in the NAS marketplace. "To me, the cost savings is in the efficiency," she said. "Having a single device that can allocate storage quickly reduces time and management costs."

With a list price of about $300,000 for a 7.5TB system, Aztera isn't cheap as far as NAS boxes go. EMC Corp.'s Clariion lists at $82,000 with 3.5TB. But Thomas said Aztera can be configured to act as five separate systems and is competitively priced in such a setup. ◗

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Dell Expands Into Enterprise Networking

Move could lower prices, analysts say

BY MICHAEL MEEHAN

Following its entrance last September into the small and midsize business networking market, Dell Computer Corp. last week announced its expansion into enterprise networking.

The move mirrors the vendor's migration from PCs into servers in 1996. Kim Crawford, the company's networking division vice president, made it clear that Dell plans to offer a full array of networking hardware, including Layer 3 routers, 10-Gigabit Ethernet and possibly even chassis switches in the not-too-distant future.

"We're just applying our business model to something new," Crawford said.

Analysts say that could mean lower prices. Dell's first two offerings, the PowerConnect 3248, a 1U (1.75 in.) Fast Ethernet switch with 48 ports and two Gigabit Ethernet uplinks, and the PowerConnect 5224, a 1U Gigabit Ethernet switch with 24 ports, are priced at $1,499 and $2,499, respectively.

"The market's so commoditized that price actually matters now," said Jason Smolek, an analyst at IDC in Framingham, Mass.

Price certainly mattered to Gilbert Maldonado when he went shopping for switches last year.

"Because budgets are tighter, I was looking to cut costs and not performance, and Dell was pretty much it," said Maldonado, information systems manager at commercial printer Capital Spectrum Inc. in Austin, Texas.

Maldonado said the reduction in IT overhead and the ability to do business with a trusted vendor swayed him in his decision last year to purchase the PowerConnect 3024. He added that he is now considering an upgrade to get the greater port density and redundant power supply of the new enterprise-class switches.

Attack of the Cisco Clones

Distribution, service and support have become more of a differentiator in the switch market than technology, said David Willis, an analyst at Meta Group Inc. in Stamford, Conn. Now that Ethernet standards clearly define what an enterprise-class switch is, Dell can step in and produce hardware that does much of what a Cisco Systems Inc. device does, he said. Willis called the Dell switches "the first of a round of Cisco clones that we're going to see."

"It won't be on the cutting edge, but a Cisco expert won't need to be retrained to use it," Willis said.

"I'm not too big on all the bells and whistles with switches. You don't use half of them anyway," said Maldonado

Smolek said Dell will likely be able to mimic the efficiency of its PC/server supply chain in the networking market, allowing it to undersell its competitors.

The new switches will put Dell into direct competition with 3Com Corp. in Santa Clara, Calif., which re-entered the enterprise market in March with a set of stackable switches. Dell will also butt heads with Hewlett-Packard Co. as a one-stop hardware vendor.

Dell has already expanded its networking sales and support to all of North and South America, and Crawford said it would extend them to the rest of the world before the end of the year.

Dell should be able to make early gains in the small-to-midsize enterprise market and could emerge as a serious threat to Cisco, said Smolek.

"Dell executes very well, and they have the ability to change the model for the market," he said. ▶

Dell's Enterprise Switches

Dell released two new enterprise-class switches last week. Both are 1U high with redundant power supplies.

POWERCONNECT 3248

- 48 Fast Ethernet ports, two ports for Gigabit Ethernet copper and two mini Gigabit Ethernet Interface Card slots for fiber support

Switching throughput: 13.6G bit/sec.

Cost: $1,499

POWERCONNECT 5224

- 24 Gigabit Ethernet copper ports, four mini Gigabit Ethernet Interface Card slots

Switching throughput: 48G bit/sec.

Cost: $2,499

Microsoft Seeks Addition of Security Technology to PCs

Palladium to protect Windows systems

BY SAM COSTELLO AND PETER SAYER

Microsoft Corp. last week disclosed that it's talking with semiconductor vendors about a plan to add a new security chip and related software to future PCs, although it added that a firm plan for doing so hasn't been finalized yet.

The proposed technology, known as Palladium, "is really about security, privacy and system integrity," said Mario Juarez, group product manager in Microsoft's content security business unit. "We're talking here about rearchitecting the PC platform."

Juarez said the security architecture envisioned by Microsoft would include a new chip with encryption capabilities and application programming interfaces that would let applications take advantage of Palladium.

Intel Corp. and Sunnyvale, Calif.-based Advanced Micro Devices Inc. have been involved in design discussions to ensure that Palladium will work with their existing microprocessor lines, Juarez said. But it's too early to say whether either of those companies would manufacture the encryption chip, he added.

Martin Reynolds, an analyst at Gartner Inc. in Stamford, Conn., who has been briefed by Microsoft about Palladium, said the planned system includes three components: the new chip, an authentication system and software that manages the security procedures.

Reynolds said the technology would work in parallel to Windows, which would shunt security tasks to Palladium. Conventional attempts to crack the security system would be difficult if it works as envisioned, he said, because intrusions would likely have to be done one machine at a time.

Michael Rasmussen, an analyst at Giga Information Group Inc. in Cambridge, Mass., said in a report that Palladium appears to include features typically built into specialized trusted operating systems used by defense and intelligence agencies.

Track Record May Be a Liability

But Microsoft has "not been very forthcoming about the details, except from a high level," Rasmussen said. He added that it's unclear how well Palladium will be accepted, partly because it's spearheaded by a company "that many have limited trust in" from a security standpoint.

Microsoft launched an internal Trustworthy Computing initiative earlier this year as part of an attempt to improve the security track record of its software. But Juarez said the company hopes to turn the development of Palladium into more of a collaborative effort.

"We understand the importance of being inclusive," Juarez said. "We do not want this to be seen as a Microsoft-only initiative."

The potential to use Palladium for data privacy and digital rights management could be another source of controversy, Reynolds said. "Palladium does have the ability to give us truly secure PCs," he said. But whether users will want all the security features it offers is unclear, he added. ▶

Costello and Sayer are reporters for the IDG News Service.

Palladium Plan

WHAT IT'S DUE TO INCLUDE: A security chip with encryption capabilities, plus application programming interfaces that would let software take advantage of the chip

MICROSOFT'S GOAL: To create a secure space within Windows-based PCs that would protect applications and data from viruses and other security threats

DEVELOPMENT SCHEDULE: Uncertain, because Microsoft is just in the early stages of planning the initiative and talking with semiconductor makers

Correction

Our Page 1 story on Microsoft's licensing in last week's issue should have stated that under the Software Assurance plan, users pay an annual fee of 25% of the license cost for server software and 29% for desktop software during the contract term. That was conveyed accurately in the definition box, but the numbers were reversed in the text of the article.

BRIEFS

Vendors Propose Web Services Specification

A group of four vendors has proposed an XML-based specification for defining how Web services should interoperate in applications. SAP AG, Sun Microsystems Inc., San Jose-based BEA Systems Inc. and San Mateo, Calif.-based Intalio Inc. said the Web Services Choreography Interface will be submitted to a standards body on a royalty-free basis after a public comment period.

Microsoft Sets Plan For Office Upgrade

Microsoft Corp. said it plans to launch a version of Windows XP for tablet PCs in November. In addition, it said the next version of Office is due to be released in May. New features planned for the upgrade, code-named Office 11, include a redesigned user interface for Outlook, new XML connectors and tighter integration with the company's SharePoint collaboration tools.

Air Force Awards Storage Rollout Deal

The U.S. Air Force awarded Lockheed Martin Corp.'s systems integration unit in Bethesda, Md., a contract to install storage networking technology and network-attached storage devices at 12 bases in the U.S. The deal includes Hewlett-Packard Co.'s StorageWorks systems and could be worth as much as $70 million over the next five years, according to Lockheed Martin.

Short Takes

SUN said it agreed to buy **AFARA WEBSYSTEMS INC.**, a San Jose-based start-up that's developing processors based on Sun's SPARC architecture. . . . **IBM** announced a 10-year IT outsourcing and e-business software development deal valued at $400 million with Helsinki-based airline **FINNAIR OYJ**.

SAP Plans Upgrade Of Apps for Retailers

Will enhance inventory planning, forecasting

BY MARC L. SONGINI

SAP AG last week announced an upgraded version of its business applications for retailers that's designed to boost demand-forecasting accuracy and give users more flexibility when they're planning what to stock in stores.

At the Retail Systems 2002 conference in Chicago, SAP said the mySAP Retail upgrade will introduce new merchandise management and planning tools and let retailers more tightly integrate planning activities into their inventory management processes. Due out by the end of September, the release will also offer additional product allocation, promotion planning and pricing features (see box).

In addition, SAP said it plans to resell retail forecasting software developed by Taegerwilen, Germany-based SAF AG and eventually embed the technology into its retail applications to automate forecasting and product replenishment functions. The SAF tool is available now from SAP.

Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif., said retailers and the application vendors that sell software to them have mainly focused on trying to squeeze costs out of the supplier side of supply chains. But, he added, "poor forecasting means too much product, too much inventory and too much waste in a retail market that lives and dies by the thinnest of margins."

MySAP Retail can be purchased as a stand-alone set of applications and connected to other back-office systems without putting SAP's R/3 software in place, said Hunter Harris, vice president of retail business development at SAP.

The enhancements, particularly one that will reduce the time it takes to format data for new store openings, sounded appealing to Shaker Heights, Ohio-based OfficeMax Inc. Steve Baisden, a spokesman for the office supply retailer, said the sooner the company can get new stores up and running, the better.

Two years ago, OfficeMax began using pieces of the SAP Retail suite, which includes human resources, merchandising and finance modules. Baisden said the company has since seen significant productivity improvements in its business operations.

He added that OfficeMax expects to save $3.3 million in annual operating costs through a combination of Version 4.6 of SAP's retail software and a new distribution system. ▶

Selling Points

SAP's upgraded retail applications will include the following new features:

MERCHANDISE PLANNING TOOLS that let users integrate factors like product colors and styles

NEW USER INTERFACES that are easier to use

STORE-OPENING CAPABILITIES that reduce the time it takes to set up data for new stores

IMPROVED PRICE MARKDOWN PLANNING, promotion planning and sales analysis tools

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Continued from page 1

SAP

after releasing a Version 2.5 upgrade in mid-2000.

But after AFS 3.0 shipped in January, SAP again began to seek out volume sales. Esther Lutz, vice president of business development for AFS, said SAP has signed on 11 new customers since 3.0 was released, increasing the number of AFS sites to about 70.

Lutz said the new customers include Levi Strauss & Co. in San Francisco, The Basketball Marketing Co. in Paoli, Pa., and Crystal Group of Companies, a garment maker in Hong Kong.

SAP announced last month that Nike Inc. in Beaverton, Ore., has completed a deployment of AFS 2.5 for 5,000 end users in its North American operations, the largest installation of the software thus far.

Meanwhile, early adopters such as Reebok International Ltd. and Wolverine World Wide Inc. continue to roll out AFS throughout their operations.

Rockford, Mich.-based Wolverine, which began using AFS on a limited basis in 1999 to handle order processing, "had to fight through a lot of issues in the early releases to get it operational," said Mike Pfennig, senior IT director at the footwear maker. "The product wasn't quite ready for public distribution, but SAP kept getting pressure from folks like us."

Now, Pfennig said, Wolverine uses one of the first AFS releases to support all of its core order-fulfillment processes. The company this weekend plans to upgrade to Version 3.0 to take advantage of promised performance improvements and new capabilities for managing returned goods, he said.

Peter Burrows, chief technology officer at Canton, Mass.-based Reebok, said his company is using Version 1.x of AFS in more than 25 countries and in various product units. The company plans to convert its North American sales distribution operations to AFS 3.0 within the next couple of years, he said.

Interest in AFS has been high because apparel and footwear makers have few other choices. Karen Peterson, an analyst at Gartner Inc., said no other major application vendor offers a packaged suite for the apparel industry.

Apparel maker Basketball Marketing plans to go live in November with a customized version of AFS and some of SAP's general-purpose R/3 enterprise resource planning modules. The software will replace homegrown green-screen applications that run on IBM AS/400 systems, said Christina Houlahan, chief operating officer at Basketball Marketing. The company chose AFS because it provides integrated applications that few, if any, of SAP's rivals sell, Houlahan said. Basketball Marketing did extensive homework on AFS before signing the contract and decided that it was indeed stable, she added. ▶

AFS WISH LIST

The app is better, users say, but they want more improvements. Read it on the Web:

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DRESSING UP AFS

1998	1999	2000	January 2002
The software is released after joint development work between SAP and a group of apparel and footwear companies.	SAP temporarily suspends sales after bugs and missing features prompt some early users to cancel their contracts.	SAP ships AFS Version 2.5, which is more stable, but it continues to selectively sign new customers to deals.	Version 3.0 is released with more flexible product sourcing and allocation capabilities and support for seasonal sales.

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IT Recentralization Efforts Paying Off — With Caveats

Strategy produces cost savings, but it can create internal management problems

BY THOMAS HOFFMAN

As companies push to recentralize their IT operations in order to reduce costs and achieve better economies of scale on technology purchases, the $64,000 question is whether those efforts are paying off.

The simple answer is yes, but not without IT managers learning some hard lessons along the way, according to several CIOs and a report that was released last week by Cambridge, Mass.-based Giga Information Group Inc.

The major stumbling blocks to recentralization include effectively communicating the rationale for the process to all IT staffers and business users and slogging through the internal political morass as people's roles and responsibilities change.

"The biggest challenge we've had over the past year is getting the word out on a global basis and getting it out with the depth that's needed," said Cora Carmody, an IT executive at Invensys Software Systems in Herndon, Va., a unit of London-based Invensys PLC. Invensys is recentralizing its IT organization as part of a 10-year, $1 billion outsourcing agreement it signed with IBM in April [QuickLink: 28478].

One of the downsides of centralization that needs to be addressed is the real or perceived view by some IT and business managers that they will lose control of operations they were responsible for under decentralized models.

Still, Carmody and other IT executives said they expect their recentralization efforts to eventually produce the targeted cost savings.

Meeting Goals

That view jibes with the findings in the Giga report. Giga analyst Marc Cecere, one of the report's co-authors, said 60% to 70% of Giga's clients "are telling me that they're hitting their cost savings" goals through moves to recentralize IT operations.

Recentralization can be counted on to yield savings on "infrastructure and other IT services that are driven by a large level of fixed costs," said Jeremy Grigg, a New York-based Gartner Inc. analyst.

For example, companies that consolidate their data centers generally see a cost reduction of 10% to 15% in that area, Grigg said. But IT functions with lower fixed costs, such as application development, "typically don't impact the cost model much," he added.

Alignment Problems

Some organizations, such as the YMCA of the USA, have aligned their IT operations under the same federated models used to run their businesses. The problem with that approach, said Jeff Bundy, CIO at the YMCA, is that the Chicago-based nonprofit organization has some 976 individual "corporations," each of which determines its own IT strategy and purchasing plans.

Bundy's group offers guidance to those entities by suggesting the adoption of organizational IT standards and providing access to a national purchasing agreement that the YMCA has with GE Capital Information Technology Solutions-North America Inc. in Newport, Ky.

But even though a recent survey conducted by Wilton, Conn.-based consulting firm Deloitte & Touche LLP on behalf of the YMCA revealed that the YMCA's IT capital spending runs lower than industry averages cited by Gartner, Bundy said the federated approach has been "less than optimal" because the organization hasn't fully corralled its national buying power.

Bundy added that he hopes that the YMCA will begin shifting to a more centralized approach to IT by year's end. ▶

What to Avoid

The top five mistakes companies make in designing IT organizations, in terms of frequency and negative impact:

1. MIXING STRATEGIC WITH OPERATIONAL: Strategic IT functions such as planning and architecture should not report within the same groups as operational ones such as development or technical services.

2. GEOGRAPHICAL DISTRIBUTION OF SOME GROUPS: Some functions can be geographically distributed without significantly decreasing their performance. However, activities that are new, difficult to measure or political can rarely be done effectively with geographical separation.

3. NOT MANAGING THE MESSAGE: Organizational change is nearly always a difficult and threatening process. Establishing a function to manage communications is wise during normal operations to help end users understand the value of IT, and it's essential during a major organizational change.

4. ENDLESS SPECULATION OVER "WHAT BUSINESS WE'RE IN": Designing an IT organization should start with a definition of your company's key business drivers. But many organizations engage in lengthy discussions about fundamental business issues. Planning shouldn't take more than three to four months.

5. NOT LINKING TO PRIMARY BUSINESS DRIVERS: In the past two years, two factors in particular have become dominant issues for IT managers: cost reduction and improved integration of systems.

SOURCE: GIGA INFORMATION GROUP INC., CAMBRIDGE, MASS

Hosting Firms Pushing Remote Management

IBM, Agiliti offer to monitor equipment at customers' sites

BY THOMAS HOFFMAN

Some IT services firms are taking a new tack by offering to remotely manage systems that are located in corporate data centers, instead of requiring them to be hosted elsewhere.

Managed services provider (MSP) Agiliti Inc. last week said it will monitor servers, networks and applications installed at customer sites. That followed a similar move earlier last month by IBM, which announced a plan to remotely manage Web servers [QuickLink: 30423].

Andy Schroepfer, an analyst at Minneapolis-based market research firm Tier 1 Research Inc., said IBM and Agiliti are among the first in what he expects will be a wave of vendors to offer "facilities-free data center services" this year.

"Almost every MSP in the sector has been looking at doing this," he said.

According to Schroepfer, just 3% of U.S. companies currently outsource all or parts of their IT infrastructures. Therefore, there's "a huge opportunity" for companies such as St. Paul, Minn.-based Agiliti that offer management services without requiring customers to move their IT equipment to hosting facilities, he said.

The concept caught the attention of AHL Services Inc., an Arlington, Va.-based provider of marketing support services to large companies.

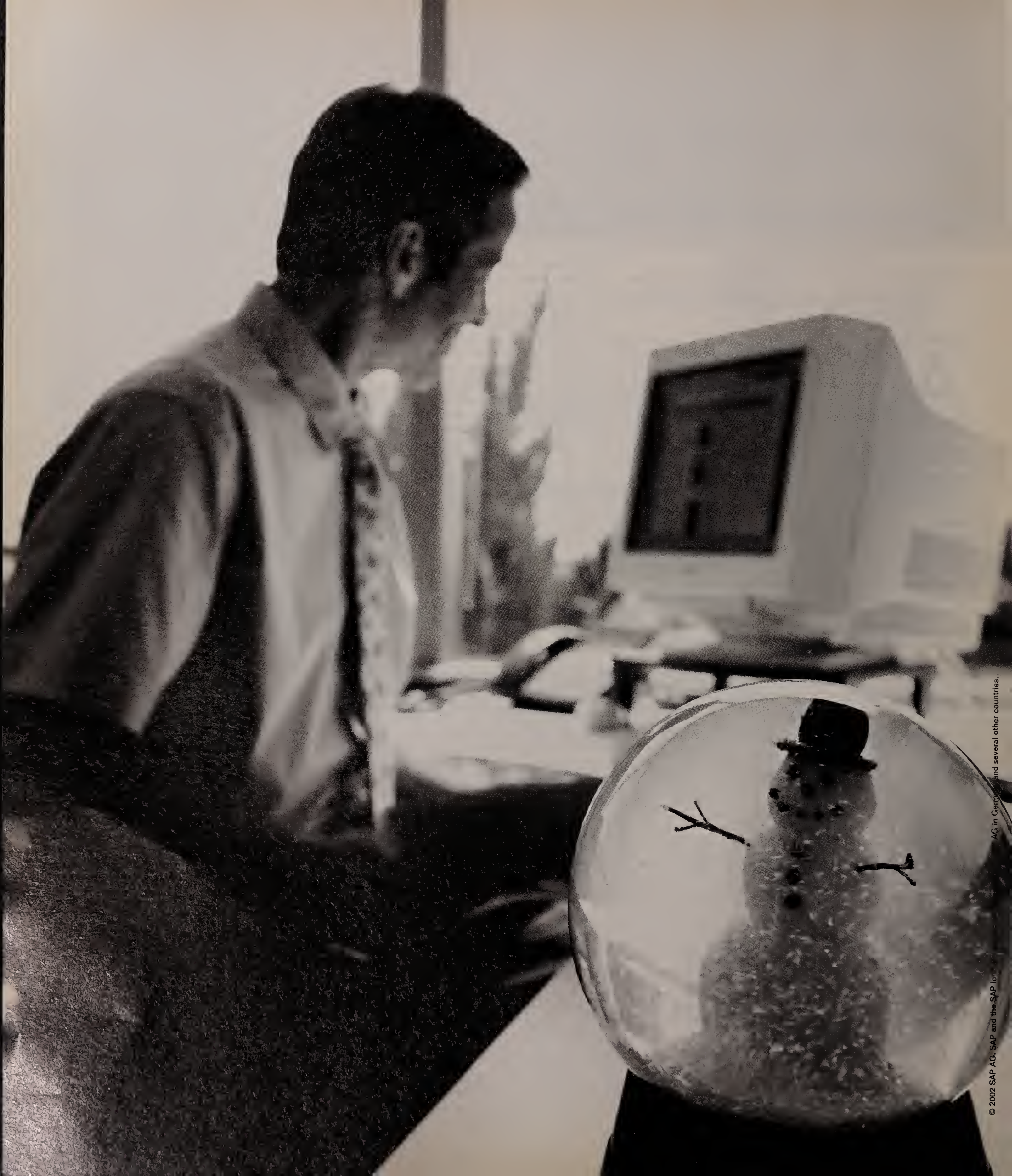
Agiliti recently began monitoring transactions and data that cross a wide-area network hub it houses for AHL to reach 25 "touch points" with the company's customers. Now, Agiliti will begin monitoring servers located in AHL's Twin Cities operations center.

AHL's desire to lower costs while retaining ownership of its equipment "played into our decision" to extend the relationship with Agiliti, said Mary Madryga, vice president of technology at AHL.

Madryga couldn't quantify the monthly cost savings she anticipates through the remote services agreement with Agiliti. But one of the benefits of the deal, she said, is that the remote monitoring services prevent AHL from "having to invest in infrastructure across our entire client base."

Pricing for Agiliti's services starts at $50 a month per device and increases based on the type of equipment and the level of service provided.

IBM's offering, called Services Anywhere, includes a variety of remote security, monitoring and storage management services for Web servers. Monthly fees will typically be about $25,000, IBM said. ▶



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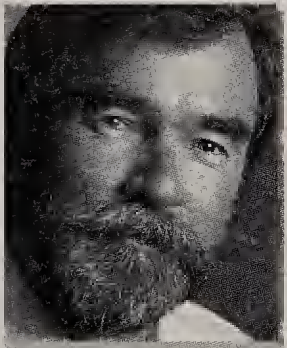
MARK HALL

The *Real* Trial

LET'S NOT SPECULATE about what U.S. District Court Judge Colleen Kollar-Kotelly will decide later this summer about Microsoft's fate. That's an academic exercise about a ruling that's certain to be appealed. Instead, let's look at how the market is judging the company. After all, you can't appeal the decision of the marketplace. And it looks to me like the market is *slowly* turning its back against Redmond.



MARK HALL is *Computerworld*'s editor at large. You can contact him at **mark_hall@computerworld.com.**

Let's start with operating systems. Despite nearly two years of intensive development, loads of incentives and far better costs, users of high-end systems — those demanding more than eight processors — aren't embracing Windows 2000 Datacenter. Microsoft acknowledges the situation and continues to work hard on breaking deeper into the data center, but IT managers remain wedded to Unix or IBM's mainframe z/OS for their biggest, most complex and most important applications.

On the low end, Microsoft likes to paint Linux as more of a problem for Sun and other Unix companies than for itself. But the open-source operating system still has its best success on one- and two-processor systems, Microsoft's bread and butter. And in market share, Linux is still edging up; it's now No. 2 in the server market, according to IDC.

IBM's all-out support for Linux is a clever attack not just on Windows, but on Microsoft applications as well. Once IBM sells a customer on Linux, that's one server that won't run a Microsoft product. This is giving developers greater incentive to build programs for Linux, quietly diminishing what has been a huge Microsoft advantage. Being with the press, I get to see a dozen or more new product press releases every day. Two years ago, it was rare if one of the new products worked with Linux. Now it's rare for them *not* to.

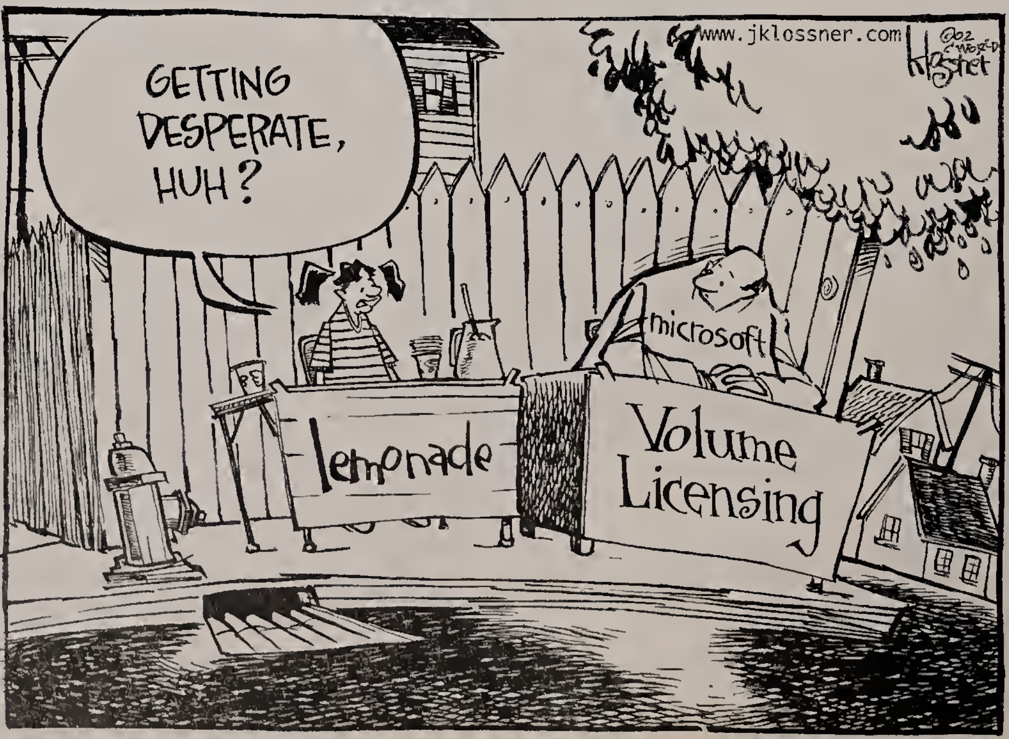
On the desktop, Microsoft's outstanding Office suite is also under the gun. Gartner has said that Sun's StarOffice 6.0 has a better than even chance of snaring up to 15% of the productivity market because "it's good enough" for the vast majority of PC users. That prediction would have been unimaginable to anyone who used StarOffice in 2000. But things change, and in 2002, it seems possible. What can we expect by 2004?

We'll see further erosion of Microsoft's dominance, for two reasons.

First, there's simple economics. Microsoft Office, for example, runs $579 retail, StarOffice a paltry $75 and change. Granted, you get what you pay for, but most people don't buy a Lexus if a Toyota will do. When CFOs discover that the vast majority of the PC users in their companies can get by just fine with a product that's one-sixth the cost, they'll insist on using it. Microsoft must now deal on price or lose deals. For once, the market is beginning to dictate pricing to the "monopoly."

Second, there are Web services. By adopting Web services technologies with admirable vigor, Microsoft has undone one of its major advantages: locking in the customer. If a Microsoft application can exchange data with a non-Microsoft application through Web services, there's much less of an incentive for users to create a homogeneous Microsoft infrastructure.

None of this is to say that Microsoft will disappear. Rather, it will continue to grow and deliver important technologies. But the judgment of the marketplace in the coming years will be far harsher than anything a judge can impose. ◗



PIMM FOX

Tools for J2EE Management Come of Age

USING JAVA to build applications in the enterprise is popular because it lets companies broaden the usefulness of their code by reusing it in new software. And now tried-and-true Java is widely seen as a solid bet for Web services work.

Java's the magic language, right?

Designed as an architecture for building new applications, J2EE has morphed into a richer, more complex environment encompassing a distributed, event-driven, loosely coupled architecture that has created a demand for the composite model of application integration and development.

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In short, nothing gets designed in isolation anymore.

Integrated transactions, message routing, integrity and the explosion of wrappers, bridges and access tools to external applications (packages you bought and legacy systems you built) mean there's a gap between J2EE's strength in designing applications and the need to manage the composite nature of newer programs that have real-time requirements.

Yefim Natis, vice president and research director at Gartner, says tools such as J2EE Connector Architecture (JCA) and Java Management Extensions (JMX) help with integration to enterprise systems, but they don't complete the picture.

JCA makes it possible to store and retrieve enterprise data in J2EE, making enterprise application integration a bit less cumbersome, and JMX provides a framework you can reuse to expose an application to remote or local management tools.

BEA's WebLogic and IBM's Web-

For more columnists and links to archives of previous columns, go to
computerworld.com/columns

Sphere both support JCA for connectivity, and vendors such as Tivoli support JMX.

But configuring the application on the fly, supporting the real-time enterprise — all these J2EE pieces produce greater complexity at the enabling layer. Management systems must respond. Monitoring must be automatic, not manual. Diagnostic tools need to be preventive in addition to serving up typical reporting and alert functions.

In this burgeoning field, companies such as Covasoft Inc. in Austin, Texas, and Wily Technology Inc. in Burlingame, Calif., have recognized that the J2EE world needs integrated systems management tools.

Tools like these give you a systemwide view of applications, and their servers, databases and other dependent platforms.

Another must for J2EE management solutions is a preset familiarity with applications from Sun, BEA, Vignette, BroadVision, Oracle and Microsoft. A management system that doesn't require extensive customization is one you can start using sooner.

The more J2EE becomes ubiquitous and the more users become dependent on the integrated applications you build with it, the more a comprehensive J2EE management system seems like an idea whose time has come. ◗

DAVID FOOTE

Who Pays for Homeland Security?

THE MORE I hear about homeland security initiatives, the more I wonder who's going to pay for it all. The government, one might naively assume. If only it were that simple.

No, I'm betting that costs will quickly trickle down until they hit your IT budget. How might this happen?

Richard Clarke, the special adviser to President Bush who heads the Critical Infrastructure Protection Board, recently said, "Cyberspace is filled with a myriad of targets for the terrorists. . . . We are not talking about the Taliban. We are talking about the hackers, who could be living or working anywhere. Likely targets of the hackers include our nation's electrical grids, our financial markets, air traffic control and public transportation, not to mention the nation's communication networks."

DAVID FOOTE is president and chief research officer at Foote Partners LLC, a management consultancy and IT workforce research firm in New Canaan, Conn. Contact him at **dfoote@footepartners.com.**

The vast majority of critical infrastructures that Clarke mentioned (to which you can add gas and oil, health care, emergency services and water supply systems) are owned and operated by the private sector or by state or local governments. Traditionally, these sectors protected themselves to a point before the feds help out. But looming over them now are cyberterrorism and previously unthinkable physical threats. Both sectors are in way over their heads, operationally and financially.

Add to this the proposed federal budget, which signals a return to deficit spending, now that the surplus created during the Clinton years has been decimated by the recession and increased spending on defense. State governments are awash in red ink, too. But unlike the federal government, most states have laws that require balanced budgets. Where will the money come from?

Since most economists agree that raising taxes does more harm in a recession, don't expect government to pick up the tab with "rainy day" funds and budget cuts. The entire private sector will soon feel an economic pinch and, therefore, so will their IT departments. Certain infrastructure industries, such as aviation and maritime, will be given higher priority and receive early government grants to pay for security enhancements. Others will be driven by market forces to expend their own precious IT resources to increase protection while they wait in line for federal money. And vendors that opt to build more security into their products — something the Bush administration is gently, but firmly, advocating in its nonregulatory homeland security strategy — will pass on the costs to customers in another example of trickle-down IT expenses. Regulations may still lie ahead if the private sector isn't motivated to improve security.

On the bright side, the feds are earmarking billions of dollars for the creation of a cabinet-level Department of Homeland Security, the biggest reorganization of the federal government in 50 years. There's an unprecedented amount of IT systems integration work to be accomplished in combining tens of thousands of federal officials from up to 100 agencies under one command structure. The bulk of the new spending won't go toward new federal manpower, insists Rep. Tom Davis (R-Va.), but rather to contractors, innovators and IT vendors. With $15 billion allotted specifically for IT in the administration's proposed fiscal 2003 budget, that's at least good news for consulting firms and their IT staffs.

But that may be the only shining light for IT. As if your budget hasn't been squeezed enough by a lackluster economy, get ready for another twist of the screw. ◗

READERS' LETTERS

Steganography Is Useful

DEBORAH RADCLIFF'S article on steganography [QuickLink: 30129] was somewhat dismissive of the art and science of this technology, leading one to believe that there is little use for it. This is truly misleading; steganographic messages are prevalent on the Web, where most people refer to them as "digital watermarks." Many companies have built identification codes into their proprietary images and logos to make tracking of unauthorized use easier. A number of hacker and shareware tools even make the code/decode process somewhat painless. Perhaps if the morons in Hollywood, who demand that we cede our long-standing rights under the copyright law and adapt our hardware to protect their content, knew more about this so-called arcane art and spent more time tracing and prosecuting the major distributors of knock-offs, we would have more robust I/O options.

Stephen Richard Levine
Franzel Mortgage Consultants
Westlake Village, Calif.

CSOs: Too Little Action

THE REASON chief security officers are being reorged out may be that they haven't provided any meaningful measurements for success and are seen as Chicken Littles with too many warnings and no action [QuickLink: 30109]. How many hackers have they actually caught? How many viruses have they prevented? How many white-collar criminals have they nabbed? How have they, with all their password schemes, protected us, Joe and Jane User, from anything? Until Joe and Jane start demanding things like protection from "drive-by hackers," CSOs will be out pounding the sidewalks.

Judy Browne
Project manager, disaster recovery
Research Triangle Park, N.C.

IM Requires Trust

MICHAEL Gartenberg's column "Being Careful With IM Use" [QuickLink: 29824] was effective, and I agree with all but three points. First, I don't believe in-house IM is the answer to security concerns; it limits your ability to communicate to customers, partners and suppliers. A truly viable long-term solution for corporate IM must support at least one of the top three IM leaders while also supporting secure messaging both within and outside the enterprise. Anything less will promote use of multiple IM applications and defeat the intended purpose. Second, restricting who is allowed on a buddy list won't fly in a free society. People don't like being told whom they can talk to, and they will bypass such restrictions with Web-based IM, e-mail and cell phones. Third, Gartenberg's rule to "treat IM the way you did when e-mail first arrived" suggests that we haven't grown up technologically since then. When e-mail arrived in the corporate world, it was restricted in a paranoid fashion due to ignorance. I believe it more appropriate to treat IM the way you currently treat e-mail. We don't need to take a step back in behavior every time a new technology comes along. Instead, we should take the lessons learned and apply them moving forward.

Tavis Schriefer
President, Ideative Inc.
Carrollton, Texas

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TECHNOLOGY

THIS WEEK

BEYOND SECURE WALLS

Providing remote workers with efficient, secure access to company applications and data is forcing organizations to deal with an array of technological issues. **PAGE 26**

ENTERPRISING APPLE

Apple's Mac OS X combines the reliability of Unix with a well-disciplined user interface that users say can save time in server configuration and support. It may even make it in the enterprise. **PAGE 30**

QUICKSTUDY

Decision-support systems are interactive computer-based tools that managers have used since the 1960s to help answer questions, solve problems and support or refute conclusions. **PAGE 31**

HANDS ON

If you make presentations on the road, reviews editor Russell Kay suggests that you check out a 2-lb. projector and PDA slide-show accessory that let you leave your laptop at home. **PAGE 32**

SECURITY JOURNAL

After two members of his security team leave, Mathias Thurman adjusts his priorities — and takes on additional responsibilities. **PAGE 33**

NICHOLAS PETRELEY

Open Source's Open Door

AS MOST OF YOU KNOW, much of success has to do with being in the right place at the right time. A golden opportunity is about to emerge, thanks to consumer advocates and a horde of greedy lawyers, and open source will once again be in the right place at the right time to exploit this opportunity.

Before I get to the external circumstances I have in mind, it's important to note that open source is earning many wins on its own. A Pentagon report found Linux and open source to be innovating more quickly than proprietary competition, as well as more robust and less vulnerable to cyberattacks.

Naturally, Microsoft's response has been to lobby the Pentagon against open source, but it will be an uphill battle. IBM has been selling Linux into the U.S. Air Force, the Federal Aviation Administration and the departments of Agriculture, Defense and Energy, and I don't see the momentum slowing anytime soon.

Microsoft's new licensing scheme and the threat of audits are also driving a lot of customers to open source, including entire governments. Peru is trying to make open source mandatory for government use. Edgar David Villanueva Nunez, a representative in Peru's National Congress, wrote a masterpiece of a letter to Microsoft laying out the need for this policy. (See *www.pimientolinux.com/peru2ms/villanueva_to_ms.html.*)

And now there's a new force about to come into play that works to the advantage of open-source adoption. It's the call from consumer advocates for legal reform that would enable customers to sue software vendors for damages from security holes and bugs.

I have a theory as to why security holes and bugs in Microsoft software haven't motivated that many people to migrate to open source. I'll bet businesses have bought into the excuse that software is simply so complicated that nobody could make it any more airtight than Microsoft already does. It's a myth, but one that is nearly impossible to expose.

Microsoft has never been held accountable for the problems in its products. Unless you know the ins and outs of the law, you're likely to conclude that the reason Microsoft has never been taken to task is that the problems aren't severe enough to justify suing Microsoft for damages.

Certainly, lawyers have every reason to pursue this. Look at the obvious facts. **Fact 1:** Microsoft sells software that is notoriously vulnerable to dangerous exploits. **Fact 2:** These problems cost companies time, money and lost business. **Fact 3:** Microsoft is sitting on billions of dollars. **Fact 4:** Lawyers often get a nice percentage when they sue for damages. **Fact 5:** Microsoft is sitting on billions of dollars. **Fact 6:** Lawyers will take on a case like this only if the accused party has the ability to pay damages. **Fact 7:** Microsoft accumulated many of those billions because it hasn't been held accountable for problems. Never mind — strike Fact 7. Moral issues are irrelevant to lawyers.

The fact that is not obvious is that software is regarded as a service, not a product. This protects companies like Microsoft. Much of Europe has declared software to be a product, a trend that would have been likely to spread to the U.S. if it weren't for vendors pushing UCITA. UCITA is Microsoft's last best hope against liability.

If consumer advocates win the fight to make software a product, it will change the landscape of the software market forever. Microsoft will be faced with an onslaught of lawsuits. Microsoft will no doubt shift any future liability to its solutions providers (assuming Microsoft hasn't already anticipated this — I recommend that Microsoft solutions providers check their contracts).

Solutions providers will abandon Microsoft en masse for open source, not because open source is more robust and less vulnerable to attacks, but because it will give them control over the software that could drag them into court. If a customer has a problem, the solutions provider can fix open source immediately. It doesn't have to wait for Microsoft to issue a patch that closes one hole and opens three more.

My crystal ball says consumer advocates will win, liability insurance providers will get rich, lawyers will get richer, open source will rule the world, and we'll finally transition into a service-based software economy. What do you think? ▸

NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at **nicholas@petreley.com.**

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Out of Sight, In Touch

Remote Workers

FIELD REPORT

Companies have a growing portfolio of products and services to choose from when setting up remote workers. The technologies help address crucial issues relating to network access, security and backup. It's important to keep in mind, however, that many of the products are new and relatively untested, especially when it comes to large-scale implementations. Remember, too, that it's necessary to back up these technologies with strong usage policies to ensure secure home-user behavior.

By Jaikumar Vijayan

Security Comes First for Remote Workers

TECH CHECK

Lots of users do significant amounts of work away from the office, either from their homes or on the road. Getting these users set up, supported and secured is a major challenge for IT.

Many products and services — often new and relatively untested in enterprise markets — aim to help corporations deal with the security and connectivity issues remote workers face. But applied judiciously, current technologies go a long way to address concerns about remote setups.

Tunneling Through

Virtual private networks (VPN) have become the most popular way to tie remote workers into the enterprise network, providing secure remote access at a reasonable cost.

David Krauthamer, director of IT at Petaluma, Calif.-based Advanced Fibre Communications Inc. (AFC), uses a VPN from Cisco Systems Inc. to provide secure access. For about $21 per month — a bit more for international access — remote workers connect to AFC's network via dial-up access, Digital Subscriber Line or cable modems. VPN technology "has grown by leaps and bounds," he says. "It was pretty rocky early on but is very solid today."

However, unguarded VPN tunnels can provide a dangerous back door into the enterprise network. VPNs that are connected to home PCs — especially those with Internet connections that are always on — can become gateways for virus attacks.

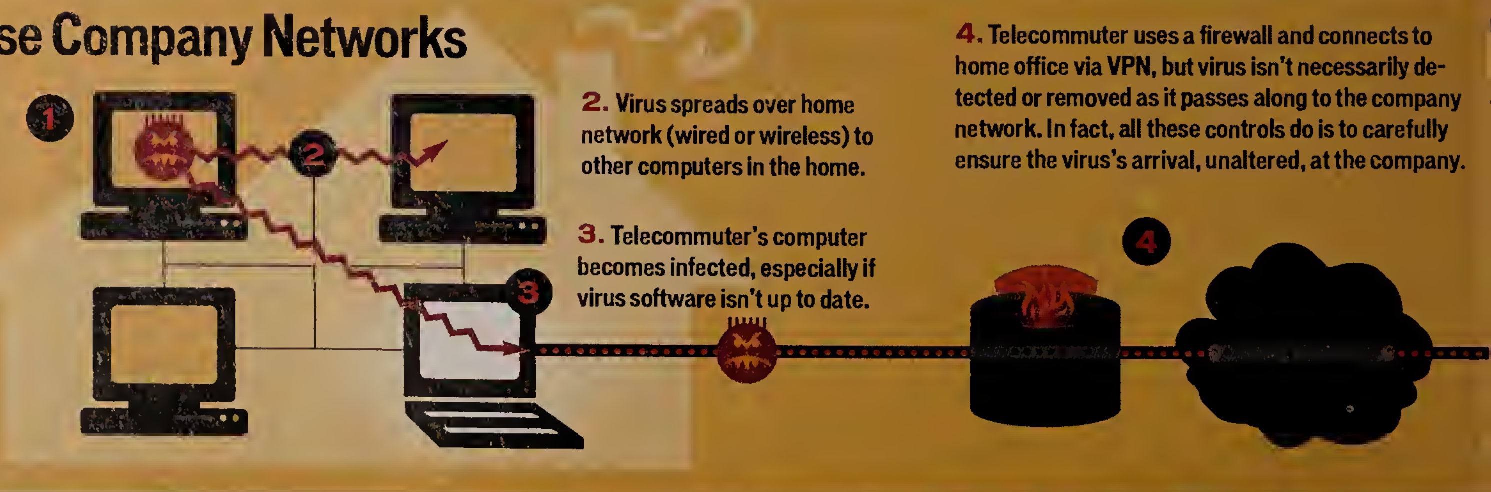
So AFC also uses a combined firewall-router appliance from Linksys Group Inc. in Irvine, Calif., to isolate a remote worker's home network from the broadband connection. The firewalls look for suspicious packets and prohibit rogue applications from being run. Such personal firewalls are a good way to protect remote workers, analysts say.

KB Toys in Pittsfield, Mass., is beta-testing the Tele3 TZ from SonicWall Inc. in Sunnyvale, Calif., for workers whose home computers connect to both the office network and private Internet accounts. The Tele3 TZ's physically separated ports ensure that home users have a secure VPN port to the enterprise and separate connections for their home networks.

Patrick Wilson, director of IT at Finisar Corp., says the Sunnyvale, Calif.-based vendor of wireless equipment uses a virtual extranet from Mountain View, Calif.-based Neoteris Inc. Remote workers have browser-based access to a Neoteris appliance that authenticates users, controls access and encrypts sessions. This eliminates the need to install and manage VPN

How Telecommuters Can Expose Company Networks

It's not uncommon for telecommuters who work from home to have one or more additional computers in the house for use by other family members. And nowadays, it's also common to have all those computers, including the business machine owned by the company, networked together to share Internet access. Here's how that situation can expose the company network, despite normal firewalls and other access controls.



1. Family member's computer gets infected from a virus-laden e-mail, infected software or floppy disk, online gaming or other source.

2. Virus spreads over home network (wired or wireless) to other computers in the home.

3. Telecommuter's computer becomes infected, especially if virus software isn't up to date.

4. Telecommuter uses a firewall and connects to home office via VPN, but virus isn't necessarily detected or removed as it passes along to the company network. In fact, all these controls do is to carefully ensure the virus's arrival, unaltered, at the company.

Making Connections

FIELD NOTES

Remote workers have a variety of ways to access the enterprise network. **Dial-up modems** are the most widely used method because they're inexpensive and relatively easy to set up. But they're slow and can severely limit the kind of applications that can be delivered to remote employees.

Digital Subscriber Line (DSL) and cable modems meet much of the bandwidth and speed requirements for most remote workers. For a flat rate, users also get an always-on Internet connection.

But it's still relatively hard to get DSL and cable modem access outside of major metropolitan areas. Another downside is that always-on connections pose a greater security risk than analog dial-up modems. Consequently, the use of either DSL or cable modem often mandates the use of a firewall technology.

Fixed wireless and high-speed wireless modems are other, more limited ways by which remote users can access the network.

"The variability of connectivity and connectivity options has implications for support and the kind of applications that can be delivered to remote workers," says Jack Gold, an analyst at Stamford, Conn.-based Meta Group Inc.

"The real challenge is managing the diversity of technology. It means working with different service providers, having multiple contracts and licenses to manage," Gold says.

As a result, "it's very hard to take a cookie-cutter approach when it comes to managing remote workers," says Patrick Wilson, director of IT at Sunnyvale, Calif.-based Finisar Corp.

Previously, Finisar employees were free to choose their DSL or cable modem service provider. More recently, in an effort to standardize, Finisar has begun to encourage remote workers to sign up with either SBC Communications Inc. in San Antonio, or its Pacific Bell unit. Finisar has agreements under which both service providers deliver standard access packages with a specific feature set to Finisar employees. ▶

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clients on each remote device, Wilson says.

Bucknell University in Lewisburg, Pa., uses Veritas Software Inc.'s NetBackup Professional software for backing up and synchronizing files on remote computers. The school has rolled out the technology to about 500 users and is "delighted" with the results, says Gene Spencer, associate vice president of IT services at Bucknell.

Such software lets remote users' back up data, says Jack Gold, an analyst at Stamford, Conn.-based Meta Group Inc. But extending the network to remote users still has its risks, says Kneko Burney, an analyst at In-Stat MDR in Scottsdale, Ariz. User behavior, always-on Internet connections and the lack of physical control over telecommuters' security environments pose risks that technology alone can't address, Gold says.

"There's no way to truly address how people behave when they're off campus," says Michael Franklin, network manager at Colby-Sawyer College in New London, N.H. The college pulled back from setting up a VPN because of such concerns, according to Franklin. ▶

ONLINE RESOURCES

Visit our Web site for links to more information regarding remote workers.

QuickLink: 30650
computerworld.com

5. The happy ending: After a virus-laden message or file reaches a corporate server, IT software will detect and remove any viruses or other malware.

But it would be easier for everyone if the telecommuter's home network had a comprehensive antivirus mechanism, as well as an effective way to keep family computers connected to one another and the Internet but unable to access the company machine.

Connecting Up The College

CASE STUDY

Colby-Sawyer College, New London, N.H.

WHO THEY ARE: Co-educational, private, residential, undergraduate college

GOAL: To enable secure wireless access to some applications by faculty and students

CHALLENGES: Current wireless access protocols and methods are less than fully secure, not very scalable and can be a bear to manage, says Michael Franklin, a network manager at the college.

STRATEGY: Testing Cambridge, Mass.-based Funk Software Inc.'s Odyssey 802.1x standard-based client technology, using a new wireless protocol aimed at providing secure anonymous connections over a wireless link to enterprise networks.

ISSUES: Funk's technology eliminates the need to maintain certificates for authenticating users on each wireless device. Instead, it allows organizations to use existing methods for authenticating users and for access control, says Franklin. But for the moment, at least, users have to manually install the Odyssey client software on each remote device.

PAYOFF: Funk's technology is an improvement over existing wireless access products, according to Franklin, who says, "It frees us from maintaining multiple certificates for each and every user." It also improves security because both the client and the access point are authenticated, he says.

PLANS: Currently testing it on 50 laptops but plans to roll the technology out to hundreds of users in the not-too-distant future. Also exploring a VPN-based remote access capability.

Securing Remote Access

PRODUCTS

Personal Firewalls For Remote Users

- **Cisco Systems Inc.**
Cisco Internetworking Operating System Firewall: offers dynamic content filtering, context-based access control, defense against network attacks, per-user authentication and authorization, and real-time alerts.

- **Internet Security Systems Inc.,** Atlanta
BlackICE PC Protection: combines personal firewall and intrusion protection for individual PCs; can be upgraded over the Internet.

- **Linksys Group Inc.,** Irvine, Calif.
EtherFast Cable/DSL Firewall Router: can limit Internet access; includes Web address and time-based filtering and support for a dynamic packet-filtering firewall.

- **Zone Labs Inc.,** San Francisco
ZoneAlarm Pro 3.0: has standard firewall features, plus new Ad Blocking and Cookie Control features.

Virtual Private Network (VPN)

- **Netscreen Technologies Inc.,** Sunnyvale, Calif.
NetScreen-5XP: integrated VPN, firewall and traffic management appliance for secure Internet connections.

- **Check Point Software Technologies Ltd.,** Redwood City, Calif.
VPN-1 Pro: suite of integrated firewall and VPN technologies for remote access, intranet and extranet VPNs.

- **Cisco Systems**
Cisco 800 Series models: fixed configuration routers that allow users to connect to corporate LANs via VPNs.

Remote Backup Products

- **Veritas Software Inc.,** Mountain View, Calif.
NetBackup Professional: offers centralized control and administration of remote backups; automated, event-driven backups eliminate the need for user intervention.

- **Novell Inc.**
Novell iFolder Professional Edition 2.0: file synchronization software that enables backup and remote access of files from remote locations.

- **Computer Associates International Inc.,** Islandia, N.Y.
BrightStor Mobile Backup: optimized for the network connections of typical remote and mobile workers.

Speciality Products

- **Neoteris Inc.,** Mountain View, Calif.
EmployeeAccess: instant virtual extranet functionality that aims to provide secure remote access without client-side software or customization of existing resources.

- **Funk Software Inc.,** Cambridge, Mass.
Odyssey server: an 802.1x-based wireless LAN access product that eliminates the need to configure certificates on client devices.

INFRASTRUCTURE

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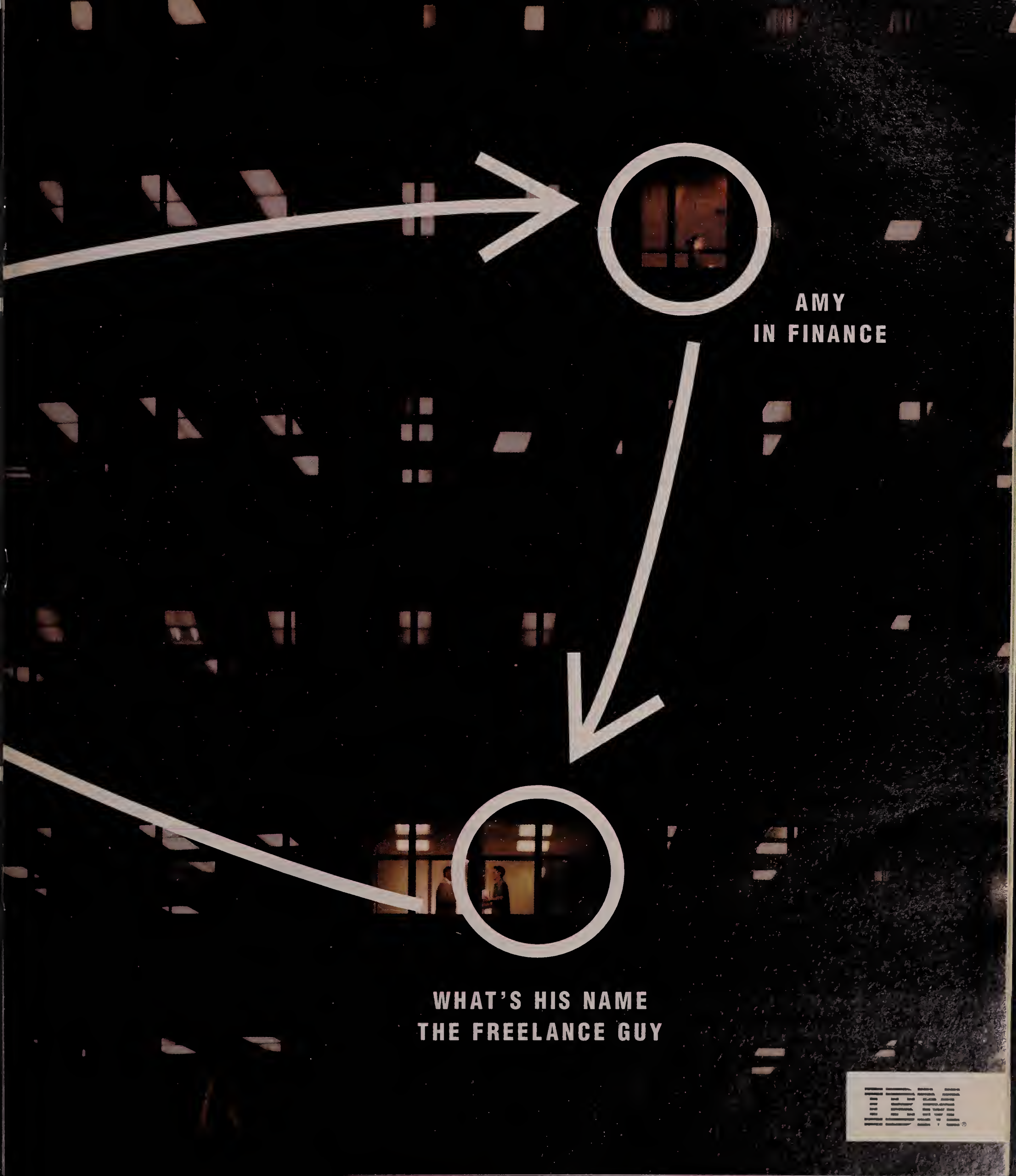

AMY IN FINANCE
WHAT'S HIS NAME THE FREELANCE GUY
IBM

Enterprises Eye Mac OS X

The Mac OS X system's stability and user interface attract server administrators, but application availability still limits business desktop appeal. By Mark Hall

THE BAD NEWS FOR Macintosh supporters is that the IT jury is still out on how Mac OS X fits into the enterprise. The good news is that at least some IT managers are deliberating with open minds.

C.J. Rayhill, CIO at Sebastopol, Calif.-based publisher O'Reilly & Associates Inc., manages 300 PCs. The operating systems in use are about equally split between Linux, Mac OS and Windows, but that could change soon. "We're looking at a wholesale changeover of our desktop systems by the end of 2003," Rayhill says.

Should Rayhill decide to consolidate onto one operating system, Mac OS X running on systems from Apple Computer Inc. is the leading candidate. She cites strong user preference within O'Reilly's IT department, noting that Mac OS X, which is based on BSD Unix and the Mach kernel, is displacing Linux as the platform of choice among developers.

Apple's new rack-mount Xserve servers, which run OS X, also appeal to O'Reilly's systems administrators (see article at right). And with OS X being the only non-Windows operating system to run Microsoft Office natively, Rayhill says having a single desktop standard is possible up and down the enterprise.

Rayhill and many other IT managers give Apple credit for what it has done to improve Unix. "A good part of Mac OS X's appeal to me is that having a disciplined interface makes work so much easier," says John Welch, information systems manager for the MIT Police Department in Cambridge, Mass. For example, he says, other Unix graphical user interfaces (GUI) have different ways to kill a job. But with OS X, it's always the same for any application.

"I've run every Unix GUI that's ever shipped — for about 30 minutes. I hate them all," says Chuck Goolsbee, vice president of technical operations at Digital Forest Inc., a Bothell, Wash.-based application service provider with 400 Macintosh servers in its data center. His conclusion: "Apple has done a great job with the GUI."

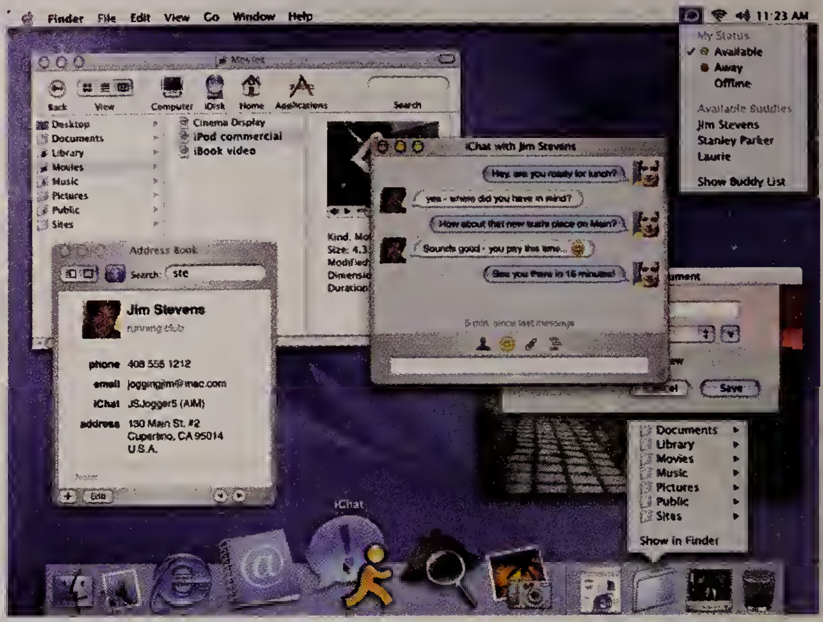
Welch, who is testing Mac OS X as a network domain controller, says a systems administrator can configure a server a half-hour faster using the Mac OS X GUI than he could using a Unix server. And he predicts that technical support for end users running Mac OS X will decrease because the underlying Unix core is inherently more stable.

Solid Foundation

The Mac OS X's stability has already proved itself to Dale Sorenson, president of Sorenson Services USA in New York. The streaming-media consultancy recently finished an 80-hour project for a client using advanced media encoding software running on Mac OS X. Now at the end of the project, Sorenson says he's "giddy with how stable it is."

"It crashed once in two weeks," he says. "But because streaming-media development always uses the most bleeding-edge tools you can get your hands on, I'm used to crashing every two hours."

The stability also pleases John Balling, executive director of integrated technology services at Willamette University in Salem, Ore. He's evaluating Mac OS X for deployment among the 1,200 PCs on campus, about one-third of which are Macintoshes. More uptime translates into fewer IT support problems, Balling says.



Hey, are you ready for lunch?

yes - where did you have in mind?

How about that new sushi place on Main?

Sounds good - you pay this time...

See you there in 15 minutes!

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Jim Stevens
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phone 408 555 1212
email joggingjim@mac.com
iChat JSJogger5 (AIM)
address 130 Main St. #2
Cupertino, CA 95014
U.S.A.

MORE THAN JUST A PRETTY FACE: Behind the user interface improvements, Jaguar, the next generation of OS X, will include FreeBSD 4.4, better Windows compatibility and additional security functions.

"It's inevitable that we will roll it out," he says, but only when and where it's needed. He adds that he doesn't see Mac OS X threatening Windows desktops because of the relative dearth of packaged software for it.

Later this summer, Apple plans to release the "Jaguar" version of OS X. Version 10.1.4 will include features that could appeal to IT professionals.

For example, Jaguar will ship with FreeBSD 4.4 (an open-source version of Unix), the new GNU Compiler Collection 3 compiler, IP Version 6 and the IPsec security protocol. It will also work better with Windows networks by adding server message block support for improved resource sharing. Apple is also building in virtual private network capabilities with the Point-to-Point Tunneling Protocol. Another plus for IT administrators is Rendezvous, Apple's proposed standard for automatic device discovery on IP networks.

Whether Mac OS X lifts Apple from its current 5% market share remains to be seen. But IT hasn't looked this kindly on the Mac in almost a decade. ◗

TOWARD DIVERSITY

Adding Mac OS X to the server mix could help slow the spread of viruses.

QuickLink: 30491
www.computerworld.com

Xserve Grabs the Spotlight

Apple Computer caught the industry off guard with the recent announcement of its Mac OS X-based Xserve servers, but users and analysts say that so far, they like what they see.

The new rack-mount servers are 1U (1.75 in.) high and feature dual 1-GHz PowerPC processors. They go head-to-head with products from Dell Computer Corp., IBM and others, says Tim Deal, an analyst at Technology Business Research Inc. in Hampton, N.H.

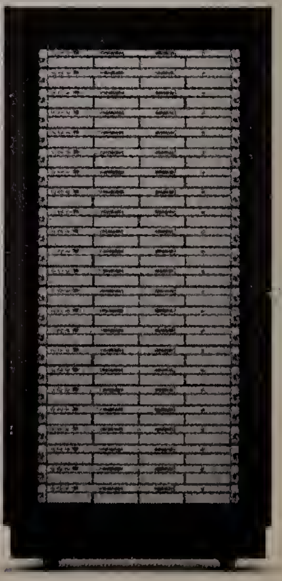
John Welch, IS manager for the MIT Police Department, calculates that Apple's Xserve, with its unlimited client user license, is less expensive than many comparably equipped Linux servers.

Welch also likes the fact that Xserve uses a board that's 28 in. long – a common design for telecommunications equipment – to better dissipate heat. Competing servers require up to eight cooling fans. He says he also appreciates Apple's choice of Double Data Rate (DDR) memory over the more expensive and pokier Error Correction Code (ECC) RAM.

The danger of DDR RAM is that fatal memory errors, rare as they may be, are more likely to occur than they are with ECC memory. Welch and Digital Forest Vice President Chuck Goolsbee agree that sensitive applications such as databases wouldn't be ideally suited for DDR, but for Web servers, firewalls and other environments, the small risk is worth the extra savings and increased speed.

Ultimately, "price/performance is going to win, because everyone is price-sensitive these days," Goolsbee says.

– Mark Hall



Apple's Xserve rack accommodates4 up to 42 servers in a single industry-standard 310-D 19-in. enclosure. Prices start at $2,999.

Decision-Support Systems

DEFINITION

Decision-support systems are interactive computer-based tools used since the 1960s by decision-makers to help answer questions, solve problems and support or refute conclusions.

BY MARK HALL

QUICK STUDY

ASK A QUESTION; get an answer. Those are the basics of computing, which is why decision-support systems (DSS) can claim a lineage that reaches back to the late 1960s, when businesses began to interactively query data to augment static reports. That they remain in use today underscores their essential function in organizational computing.

DSS emerged from a data processing world of routine static reports, according to Clyde Holsapple, professor in the decision science department of the College of Business and Economics at the University of Kentucky in Lexington. "Decision-makers can't wait a week or a month for a report," he says.

Holsapple says that advances in the 1960s, such as the IBM 360 and other mainframe technologies, laid the foundation for DSS. But, he claims, it was during the 1970s that DSS took off, with the arrival of query systems, what-if spreadsheets, rules-based software development and packaged algorithms from companies such as Chicago-based SPSS Inc. and Cary, N.C.-based SAS Institute Inc.

Those capabilities put DSS on the front burner of many information systems project leaders, and it has remained hot ever since.

Information, Please

Tim Harvic is chief technology officer at ProLogis Trust, a publicly held real estate investment trust in Aurora, Colo. He oversees all of the IT systems used to help manage the 1,727 global properties held by the trust. ProLogis buys land and develops properties of all sizes to serve as distribution centers; it has a total of more than 200 million square feet of leased facilities in 36 cities in the U.S. and 14 other countries.

ProLogis also supplies the IT infrastructure at each site for companies that lease the properties.

"You need DSS capabilities to do what we do," Harvic says. "We need to know not only what we have, but when we're going to get something and where it's got to go."

Harvic says that end users need to have analytical tools that see beyond their business units. "Once you have visibility across the enterprise, you have to be able to make decisions on the data," he says.

Such an interdepartment, or even intercompany, approach to data analysis is becoming the next phase of DSS, says Mike Schroek, global iAnalytics leader in the data warehousing practice at PwC Consulting, the consulting and technical services business of PricewaterhouseCoopers in New York.

"Most companies have done DSS in silos by business unit," Schroek says. "But now companies are asking for DSS over their entire value chain."

He says decision-makers are no longer satisfied with having every department and division chart its own DSS course.

"Yes, you can analyze CRM or ERP data today," Schroek says. "But you need to combine the information into a single data warehouse for a consolidated interpretation of the information.

"Executives are getting frustrated with the number of sets of numbers being used in the organization," Schroek claims. "They want one version of the truth."

PwC estimates that in companies today, only 10% to 20% of users access DSS tools. Schroek says that to reach the remaining 90% to 80%, companies are going to need to "embed analytics into core solutions" as IT deploys them.

Holsapple takes a different view. "Decision-support systems are so pervasive in their use that people don't even think of them as DSS," he says. He points to the spreadsheet as one of the most common ones used in business today. And, he says, most executives use corporate planning tools with DSS capabilities in them.

But Holsapple agrees that more work can be done, especially with application data integration. Still, he points to the wide range of DSS tools online that anyone can use as the successful entrenchment of DSS analytics in our lives.

"If you go to Weather.com and look at the forecast and decide to bring an umbrella with you, you're another successful user of decision-support systems," Holsapple says. ◗

DSS Architecture

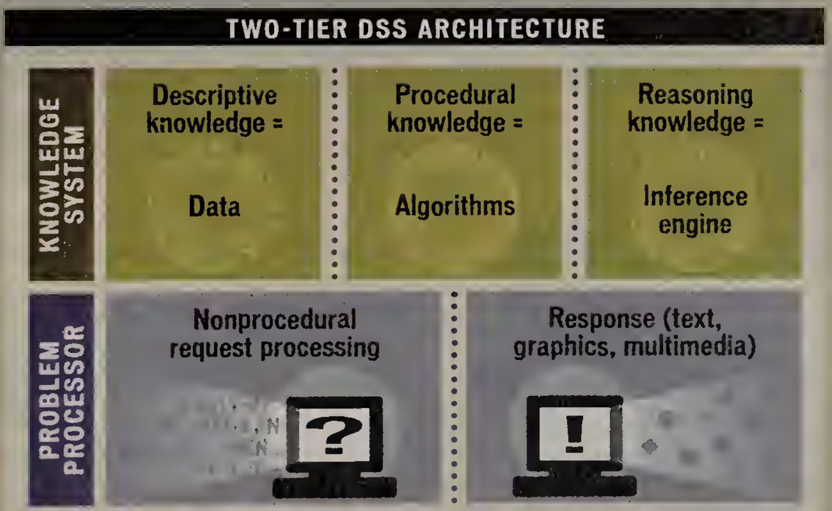
A DSS needs a two-layer architecture, according to professor Clyde Holsapple, who teaches DSS design at the University of Kentucky.

The DSS kernel is the problem processor. It accepts requests in nonprocedural languages and responds with text, graphics, multimedia or some form of output.

The problem processor draws upon the knowledge systems defined in the DSS. Those systems can offer procedural knowledge, such as an algorithm used to recognize patterns in data; descriptive knowledge, such as raw data itself; or reasoning knowledge, which feeds predefined inferences to the problem processor.

This architecture, Holsapple says, holds true for early DSS deployments and for so-called business intelligence (BI) applications today. Online analytical processing, BI and knowledge management "are all manifestations of decision-support systems," he says.

– Mark Hall



FOR MORE INFORMATION

For some online resources about decision-support systems, go to:

QuickLink: 30700
www.computerworld.com

Are there technologies or issues you'd like to learn about in QuickStudy? Send your ideas to quickstudy@computerworld.com

A New Kind Of Roadshow

When you want to travel light and still show your PowerPoint presentation, the combination of a nifty PDA accessory and a 2-lb. projector makes a compelling package. By Russell Kay

JUST A COUPLE OF YEARS AGO, taking a PowerPoint presentation on the road was a real drag. In addition to your 7-lb. laptop computer, you also needed to carry along a heavy (6 to 10 lb.), bulky and fragile projector if your audience was going to be bigger than a couple of people.

Today, your load can be significantly lighter. There are now numerous laptops available in the 3- to 4-lb. range. And for a real help in packing, there's now a tiny, 2-lb. projector from Plus Vision Corporation of America in Beaverton, Ore., that's incredibly good.

But for the utmost in lightening your load, a new accessory called Presenter-to-Go from Margi Systems Inc. in Fremont, Calif., lets you feed your PowerPoint presentation to that 2-lb. projector directly from a Palm or Pocket PC handheld device.

HANDS ON REVIEWS

V-807
Plus Vision Corporation of America
www.plus-america.com
$2,295

A Lighter Light

A year and a half ago, *Computerworld* gave high marks to Compaq Computer Corp.'s then-new iPaq projector [QuickLink: a2250]. At just under 3 lb., it was the lightest available projector at the time. The V-807 model from Plus Vision isn't quite as good a performer, but it is designed to project a lower-resolution, less-bright image. It also makes some compromises in order to achieve the smallest possible size and weight and to keep its list price down to $2,495. (It's readily available for $2,295.)

When you look at the little silver box sitting there, just 5.6 in. by 7 in. and under 2 in. high, it's hard to believe that this is a serious tool, because it makes every other projector on the market look gargantuan in comparison. And to round out the package, the V-807 comes in a compact carrying case that accommodates the projector and its cables.

As with the majority of new projectors, the Plus Vision V-807 is built around Texas Instruments Inc.'s digital light-processing chip, in this case in an SVGA resolution (800 by 600 pixels). It uses a compact, high-intensity lamp for a brightness rating of 800 lumens — on the low side, but certainly acceptable for many, if not most, uses.

On the downside, the lens has no zoom capabilities, so the only way to adjust the projected image size is by moving the device closer to or farther from the screen. This projector is at its best in a relatively small room, but keep in mind that the V-807 has to be at least four feet away from the screen or wall. Get closer than that, and you lose focus.

The V-807 has digital controls for correcting image keystoning in both horizontal and vertical directions, and these work quite well. There's a digital zoom, which lets you enlarge part of the image up to 10 times, but at that point, it gets pretty fuzzy.

Finally, although the V-807 has only SVGA output, it will accept XGA input (1,024 by 768 pixels) and convert it; I saw no artifacts from this conversion process while using the device.

The lamp, rated for 1,000 hours of use, is contained in a cartridge for relatively simple changing, but you do need a screwdriver. In addition, the projector keeps track of how long the bulb has been burning, so you can anticipate when you are likely to need a replacement.

That much light in a small package generates a fair amount of heat, but it's well dispersed by the fan and didn't build up too much. In addition, in a small room, for which the projector seems designed, the fan noise is clearly audible, though I wouldn't call it objectionable. The power switch turns the lamp on and off, but the fan runs whenever the projector is plugged in.

All in all, this is quite a remarkable projector.

Handheld Slide Show

The second half of the lightweight roadshow package is Margi Systems' $199 Presenter-to-Go, which lets you leave your laptop at home and run the show from your Pocket PC- or Palm OS-based handheld device.

The package includes either a compact flash or PC Card for Pocket PCs, a Springboard module for Handspring's Visor, or a secure digital card for Palm handhelds, each of which fits into the expansion slot of a personal digital assistant (PDA) and connects to a cable that plugs into a normal monitor or a projector's standard VGA input. Margi Mirror software compresses a PowerPoint presentation and loads it from your PC to your PDA.

When you run the presentation from the handheld, you can see your speaker's notes on the handheld while projecting the regular slide. Also, you can run a color slide show from a monochrome PDA — how's that for versatility! And while you can't create PowerPoint presentations per se on your handheld, you can still create and show presentations based on Word or Excel documents by "printing" them to a special driver. Presenter-to-Go outputs XGA graphics, making it a perfect match for the V-807.

Presenter-to-Go
Margi Systems Inc.
www.margi.com
$199

What's the catch? Surprisingly, there is little evidence of a downside to Presenter-to-Go. It doesn't support PowerPoint animations, transitions or sound; it's limited in its ability to show "build" slides; and you're restricted to the memory capacity of your PDA. But for most presentations, this is a delightful way to go. Indeed, it's one of the more remarkable products I've seen in the past year. ◗

Staff Resignations Put Security Ops in Triage

The departure of two key staffers leaves Mathias scrambling to keep his security infrastructure online. By Mathias Thurman

SECURITY MANAGER'S JOURNAL

TWO MEMBERS of my security team gave their two-weeks' notice this week. Each departed for different reasons. Our most technical security engineer left to start his own company. Our security auditor jumped ship for one of the big consulting companies. It offered him a significant salary increase, more vacation time and the opportunity to build his own team.

We tried to keep both of them, without success. In my experience with the information security business, the average tenure for a security engineer seems to be about a year. Even in today's uncertain economic climate, keeping security professionals is a problem. But the more immediate question is, How do I keep things going until I can hire and train replacements?

Juggling Hats

With two staffers leaving at the same time, I have to make changes to the way we've been managing our security infrastructure. My role is expanded until we can find qualified replacements. I know that it will probably take at least a month to find people. And once we find and hire qualified candidates, it will take another month to train them and bring them up to speed. For at least two months, then, I must take responsibility for the infrastructure and programs that the workers were managing — or try to delegate them.

The department's core deployments include an intrusion-detection system, a two-factor authentication system and firewall management. In addition, we still have architecture reviews, audits, secure server baseline construction, policy creation and review, and plenty of other one-off issues that typically plague the department.

In order to deal with the increased workload, I need to off-load certain aspects of our daily activities to other areas of the company. This week, I focused on our intrusion-detection system deployment and our SecurID authentication infrastructure. The security department is responsible for incident response related to alerts generated by Tripwire, from Portland, Ore.-based Tripwire Inc. We are also responsible for the day-to-day administrative activities related to the SecurID infrastructure.

We run Tripwire on more than 50 Unix servers within our DMZ and corporate network. They are currently configured to send alerts via e-mail to an alias account to which the security department and the Unix administrator are subscribers. I also configured Tripwire to run a check on five especially critical files at 10-minute intervals. For example, the /etc/passwd and the /etc/shadow files contain information on accounts and passwords. If someone were to add an account, the password and shadow files would change, and Tripwire would issue an alert on that change. If Tripwire detects a change in any of the critical files I've identified, it sends an alert to my cell phone.

> **The average tenure for a security engineer seems to be about a year.**

I don't receive a significant amount of alert traffic, but in order to concentrate on other aspects of our security infrastructure, I need to off-load the incident response to another trusted area of the organization.

So I met with the manager of my company's network operations center (NOC) and explained the situation. We agreed to have the NOC analysts help out by receiving and responding to Tripwire alerts. I will also configure Tripwire to send Simple Network Management Protocol trap alerts to our central enterprise management application.

We're using San Francisco-based Micromuse Inc.'s Netcool for monitoring the status of our infrastructure. I'm writing an escalation guide and will provide the NOC teams with a short PowerPoint slide presentation to help them understand what Tripwire is and how to respond to alerts. Netcool will provide an immediate notification of the alert, and the corresponding e-mail will provide details of the alert (which files changed, when and how). The challenge will be training the analysts to determine whether an alert is legitimate.

The NOC manager also agreed to help me deal with some of the administrative issues regarding our SecurID token infrastructure. We use Bedford, Mass.-based RSA Security Inc.'s ACE server for our two-factor authentication needs. Ninety percent of the support issues involve users who leave their tokens at home, users who forget the passcodes associated with their tokens or token malfunctions that require issuance of new tokens.

RSA's ACE implementation includes several Web-based tools to deal with these issues. One of these tools, called Quick Admin, gives administrators a predefined set of actions for token administration. The tool installs on a Web server, and administrators access it by way of a SecurID token-protected Web page. As security manager, I control who gets access to this Web tool. The administrators can execute only certain functions, but I maintain full control of the SecurID infrastructure.

Again, I created an administration guide, provided a PowerPoint slide presentation for the NOC analysts and trained them on how to deal with the main SecurID issues.

The Next Step

My next task is deciding how to deal with our intrusion-detection infrastructure. For now, I'm going to retune our network sensors to filter out many of the false positives and focus on a select group of signatures that I feel are important, given my company's network, systems architecture and configuration. Once we're fully staffed again, I'll consider relaxing the filters, because even false-positive traffic can be useful for data correlation.

I don't currently have the time or resources to analyze and correlate traffic. Hopefully, these actions will buy me some time until I can get new staffers on board. ◗

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum.

QuickLink: a1590

To find a complete archive of our Security Manager's Journals, go online to
computerworld.com/smj

SECURITY LOG

Check Point Embraces Wireless

Check Point Software Technologies Ltd. in Redwood City, Calif., has certified a handful of new wireless networking products as complying with its OPSEC (Open Platform for Security) standard. The company says it will allow those devices to be managed from within Check Point's Security console. Products from Intel Corp., Proxim Corp., Nokia Corp., Hewlett-Packard Co., IBM and Microsoft Corp. are now supported.

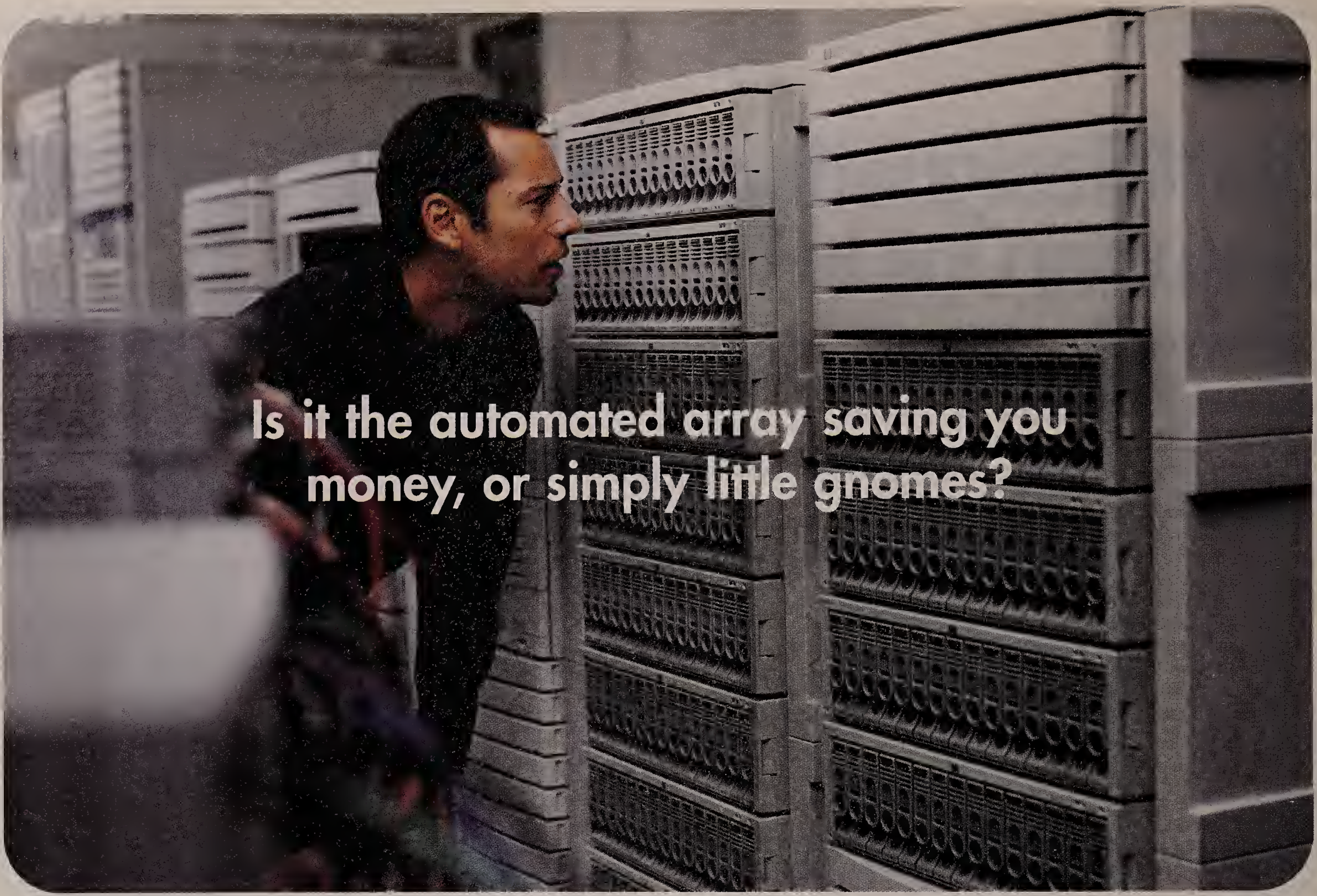
Goodbye, VPN

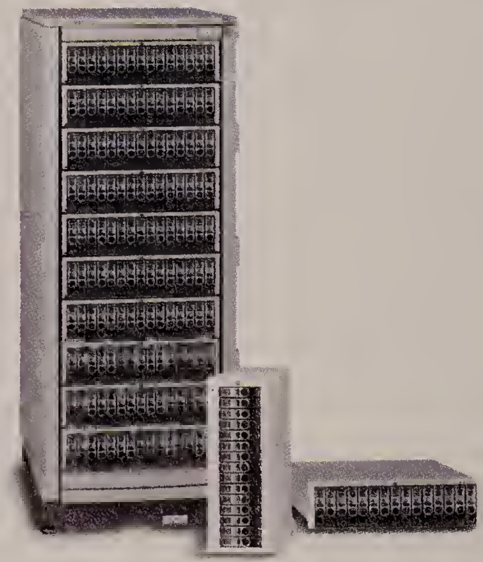
Start-ups such as Neoteris Inc. in Mountain View, Calif., offer Secure Sockets Layer-based remote access hardware that's easier to manage than IPsec-based systems, said analyst Galen Schreck in a recent report from Forrester Research Inc. in Cambridge, Mass. These systems rely on a Web browser rather than on a virtual private network (VPN) client. Users shouldn't dump their VPNs yet, however. Promised support for the fat clients that many client/server enterprise applications require has yet to materialize, he says.

NEOTERIS' INSTANT VIRTUAL INTRANET

CISSP Changes

Last month, the Certified Information Systems Security Professional (CISSP) club became a bit more exclusive. In addition to passing the CISSP exam, candidates must receive a written endorsement from a CISSP attesting to their experience and suitability for the title. And starting in 2003, Framingham, Mass.-based International Information Systems Security Certification Consortium Inc. will require CISSPs to have four years of experience or "three years with a college degree or equivalent life experience."


Is it the automated array saving you money, or simply little gnomes?



It's the automated array and all of its cost-saving features. HP's Virtual Arrays save you money by automating the manual processes required in traditional arrays. Tuning out hot spots, adding storage space and protecting your most sensitive data—automatically. Freeing your valuable IT resources and taking the mystery out of efficient data management. HP's Virtual Arrays protect your investment by being forward compatible well into the future.

[Hurry, request your free copy of the *HP Virtual Array: Double Your Operating Efficiency* **guide now, visit www.hp.com/info/virtualarray or call 800-477-6111 ext. 45761. And find out about our Build a SAN offer, where you get an HP Brocade switch absolutely free with purchase of an HP Surestore Virtual Array.]**

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MANAGEMENT

THIS WEEK

STRATEGIC HIRING

Smart IT managers are using the contracting lull to take a strategic look at staffing and to study when and how to use contractors to their advantage as the economy starts to improve and projects get going again. **PAGE 36**

QUICK SAVINGS WITH SANs

SAN costs vary according to the complexity of each installation, but experts say immediate cost savings are all but guaranteed. **PAGE 38**

DO-GOODERS

IT volunteers can gain skills and experience, but they say such service rarely leads to a new job that pays the bills. **PAGE 39**

PROLOGIS CFO Walter Rakowich (left) and CTO Timothy Harvie are in sync on IT investments.

FOLLOW THE MONEY

More and more, companies expect their top-level technology professionals to have a thorough understanding of finance and accounting, say corporate CFOs. **PAGE 42**

CAREER ADVISER

Fran Quittel offers advice to a programmer/systems administrator about the potential for a career built around Linux on mainframes. She also counsels an experienced programmer who has added Visual Basic to his list of skills. **PAGE 44**

PAUL A. STRASSMANN

Misleading Metric

WE ROUTINELY read elaborate tabulations of average IT-spending-to-corporate-revenue percentages by industry. For instance, last year's benchmark for the banking industry, according to Meta Group, was 5.16%; from Gartner, 4.1%; and from *InformationWeek*, 8%. In telecommunications, the numbers were 5.8% (Meta), 10.5% (Gartner) and 17% (*InformationWeek*). Similar disparities can be found for other industries.

If you have been asked to prove that your IT spending is reasonable, the best way to answer is to use the highest number you can find. Then you can plead for more money if your original budget request was less than what's supposed to be "normal" for your industry. Yet, one CIO used below-average spending levels (at performance appraisal time, not budget review time) to argue that spending less than "normal" was evidence of superior IT management.

The problem with an average is that the numbers depend entirely on what you measure and how you measure it. The damage occurs when irrelevant averages are used to justify risky decisions.

In that vein, I believe that IT/revenue benchmarks are irrelevant. But why have they been so popular? The most plausible answer is that they're easy to explain. But the real reason has to do with the changing structure of U.S. businesses. Rising revenues, especially during inflationary periods, place all IT spending on an automatic escalator if a firm sets spending levels using a fixed IT/revenue benchmark. As firms outsourced growing shares of their costs, revenues kept rising, even though payrolls were shrinking. This way, IT executives could rationalize more spending, even as the prices for IT products and services were falling. The IT/revenue percentage is also a handy way of explaining that IT shouldn't be driven by economics, but propelled by an "arms race" to match whatever competitors are doing. To get around financial justifications, such as ROI calculations, all you need to do is find a consulting service that would demonstrate that your competitors have a higher average IT/revenue percentage.

Perhaps the best way of illustrating the irrelevancy of such industry-related metrics is to pick a relatively stable and technologically conservative industry sector: manufacturing. According to Gartner, the average IT/revenue percentage in manufacturing last year was 2%. According to Meta, it was 3.76%. So, I took a random sample of data from 74 manufacturers producing similar goods. My findings? Even though all the firms were grouped into the same industrial category, they displayed a remarkable range of financial metrics. Revenue per employee (an indicator of how much a company outsources functions) ranged from a high of $330,225 to a low of $45,496. Transaction costs per cost of goods [QuickLink: 28368], which indicates the amount of information processed to sell those goods, ranged from 97.2% to 3.1%. The sales, general and administrative expense per employee (which indicates the amount of IT needed to support revenue) ranged from $92,837 to $8,944. So, applying the IT/revenue percentage as a "normal" benchmark to all manufacturing firms wouldn't recognize their enormous differences and would be misleading.

Executive Implications

IT spending is *not* a characteristic of an industry, but a unique attribute of how a particular firm operates. Revenue-based "profiling" based on industrial classification is as questionable as other approaches based on criteria that don't recognize a company's specific characteristics. For instance, a superior steel company's numbers could look more like those of a superior computer manufacturer than those of an inferior steel company. CIOs should stop taking an easy (and easily manipulated) path for explaining their spending plans. Don't ask what others tell you is the "right" spending, but commit to what profits you can deliver for the company, whatever the cost. ◗

PAUL A. STRASSMANN has been trying to exorcise the persistence of IT/revenue percentages ever since his budgets were cut for that reason. He can be reached at **paul@strassmann.com.**

EDITOR'S NOTE

Effective this issue, **Paul A. Strassmann** is taking a sabbatical from writing his column to take a one-year post as senior adviser on information management and technology to NASA.

Rules of ENGAGEMENT

How and when to use contractors to your strategic advantage. BY KATHLEEN MELYMUKA

FERRUCCIO SARDELLA

BEFORE THE ECONOMY TANKED, when hot skills were at a premium, a Houston oil company's IT department brought in quite a few high-priced contractors to get some key projects done. Talent was hard to come by, and IT couldn't be too choosy. Some of the contractors lacked social skills, and resentment began to build between them and the permanent staff. Before long, permanent employees began to leave. Frantic, the IT manager filled the gaps with more contractors, which encouraged more walkouts. Soon, contractors made up half the workforce, the IT culture was lost, and morale was shot. At last report, the company was still trying to figure out what went wrong.

The helter-skelter use of contractors was a bad practice that has been temporarily cured by the economy: When it went south, contractors went with it. "Temps in projects that didn't have clear ROI in the near future were among the first cut," says Chris Moody, chief operating officer at Aquent Inc., a Boston-based staffing firm.

Consultants used to make up 15% to 30% of IT departments. Now they're used mostly to get around hiring freezes by flying under the head-count radar. Or pay is project-based, rather than through employee payroll.

But smart IT managers are using the contracting lull to take a strategic look at IT staffing. "We want to make sure that we're staffing based on business needs, which is an internal factor, and the economy and employment market, which are external drivers," says Tran Taylor, director of human resources for IT

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at The Home Depot Inc. in Atlanta, which brought him on board specifically to look at strategic staffing.

The following are some of the rules of engagement that Taylor and other smart IT managers are considering for use, both now and when the economy heats up again:

FLEXIBILITY: Use contractors to provide temporary skills fast. "As projects ramp up, you bring them in, and as they ramp down, you don't have to use them," explains Chuck Conley, human resources manager at National City Corp., a financial services company in Cleveland. "It saves us from layoffs."

SCOPE AND LENGTH: Use contractors for limited, short-term projects or modular development where developers don't need to understand the entire system, says Taylor.

VOLUME: "The classic mistake is overhiring temps," says Kazim Isfahani, a principal analyst at Robert Frances Group Inc. in Westport, Conn., who specializes in human capital management. "You don't want numbers to get too high, because you get into conflicts with permanent staff and start losing people."

LEARNING CURVE: Be aware of the cost of getting contractors up to speed, says Taylor. "You think bringing in contractors will be a quick and easy solution, but they're not familiar with the internal IS infrastructure or legacy systems," says Taylor. As a result, your own people have to take time out from their work to educate the contractors.

SKILLS BASE: Don't use contractors in lieu of building your own long-term skills base. Conley sometimes puts a contractor or two on a project to teach in-house team members a skill while helping to get the work done.

OVERRELIANCE: In many companies, the recession has forced deep layoffs, but if you find yourself using temps to fill critical positions, you're in big trouble. "If you start to eliminate people and then go to temps as a stopgap, you've cut muscle," Isfahani says. "You're not running the business right."

TRYOUTS: Consider permatemps. "It's a try-before-you-hire position, where client and talent agree upfront to go through a trial where both decide if they're happy," says Moody. This worked for CIO Brent Zempel at Life Time Fitness Inc., a health club company in Eden Prairie, Minn., that was beefing up its IT staff. Nearly half of his 50 or so permanent IT workers started out as temps.

MANAGEMENT: Stay on top of your contract workforce, says Diane Tunick Morello, an analyst at Gartner Inc. in Stamford, Conn. "People are brought in like leased equipment, and over time, they just stay, and they may be supplying skills no longer required," she says. "You're not managing them, and it's costly."

Buyer Beware

When you start hiring contractors again, you'll see a very different talent pool than you would have seen in 2000, but what that means is variable. Ross Fernandes, Silicon Valley area manager at Aquent, says rates are severely depressed, now that so many people are looking for contract work. "A guy who was getting $125 an hour in 2000 is now accepting $65," he says.

Taylor agrees that it's a buyer's market. "We're finding a higher skill set now" among temps, he says, adding that laid-off IT workers are moving into contracting to pay the bills.

Others find the talent pool wide but shallow. "The market may be flooded with numbers, but not with high skills," says Conley. Layoffs don't usually target the cream of the IT crop, he adds, and as a result, current contractors are "charging more for less."

Jack Santos has found that the competition for jobs pushes some contractors to overstate their abilities. "With more people looking, there's a tendency not to be as honest, to say, 'I'll take it and I'll learn it at night,' " explains Santos, IT director at Bowstreet Inc., a Web services company in Portsmouth, N.H. "But I'm paying a premium and that's not what I'm looking for, so I have to be a lot more inquisitive."

If you don't screen contractor applicants carefully, you may be sorry, says P.J. Grabowski, human resources/IS manager at Magellan Behavioral Health Systems Corp. in Maryland Heights, Mo. "Sometimes, in two or three weeks you realize they're not going to cut it," she says. "Then you have to replace them, so you've lost those two weeks plus the time it takes to replace them and get the new one up to speed."

Bottom Line

How many contractors should you use? "There's no one-size-fits-all formula," Taylor says. "It's highly predicated on business needs and market demands." About 10% of his current IT workforce is temporary, whereas the number at National City is only 3%. Both figures are down from a few years ago.

Isfahani offers one rule of thumb: "You can run your department with no temps, but you can't run it with too many," he says. "If the mix is over 30%, cut it."

How well you manage your employee mix ultimately depends on how well you understand the needs of your business and how well you tie that understanding to an effective recruiting program for both temps and permanent staffers, Isfahani says. "If you know you will need certain types of people in six, nine, 12 months, you can put processes in place to bring them in. If you don't do that, you can get stuck," he says. ▶

DEFINITIONS

CONSULTANTS Intellectual capital. Use them for their experience and capabilities in areas such as project definition, strategic planning and problem solving. They can help you plan and organize an initiative.

CONTRACTORS Operations-oriented worker bees. Use them for their execution skills once tasks have been defined. They can help you manage the peaks and valleys of resource needs and fill specific, short-term skills gaps.

PERMATEMPS Temp-to-perms. These are consultants or contractors who may eventually be offered permanent work.

THE CONTRACTOR LIFE
Two IT contractors address the pros and cons of being full-time contractors.
QuickLink: 30892
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When Should You Hire Contractors?

Diane Tunick Morello, an analyst at Gartner, says IT managers should consider contractors for the following kinds of work:

1. **Nonstrategic projects**
2. **Work that doesn't touch core business processes**
3. **Urgent projects with short deadlines**
4. **Work requiring technical know-how but no contextual knowledge**
5. **Short-term work**
6. **Work requiring temporary skills that don't have to be leveraged later**
7. **Filling in for unforeseen staff losses, such as short-term leaves of absence or surprise resignations**
8. **Adjusting to surprises, such as unanticipated projects (too many surprises, however, may indicate flawed management)**
9. Trial engagements
10. Knowledge transfer

Saving With SANs

Calculating costs may be tricky, but experts say quick savings are all but guaranteed. By Mary K. Pratt

BLUECROSS BLUESHIELD of Tennessee Inc. has spent between $3 million and $3.5 million over the past three years on a storage-area network (SAN) that includes 40TB of storage.

That may seem like a hefty capital investment, especially in storage, which is increasingly considered a commodity item. But you must also consider the savings, says Bob Venable, enterprise systems manager at the Chattanooga-based health insurer. They amount to more than $1.5 million per year and come largely from reductions in the time and labor costs related to identifying and solving storage-related problems.

ROI

BlueCross BlueShield's return on investment is impressive, but it's also far from typical. In fact, experts say there's no such thing as typical when it comes to cost savings from SANs, since there's no single formula for calculating their cost. Instead, the cost of implementing and running a SAN varies tremendously depending on a company's existing equipment, storage needs and planned acquisitions. The same variables also affect a company's ROI.

How SANs Cut Costs

SAN architectures cut costs by connecting servers, storage systems and backup devices to allow centralized storage management and reallocation.

"This is a data center management team's nirvana," says David Cyganski, a professor of electrical and computer engineering at Worcester Polytechnic Institute in Worcester, Mass.

But comparing the costs of implementing and running a SAN with those for other storage systems, such as direct-attached storage or network-attached storage (NAS), is tricky. The initial costs associated with a SAN are significantly higher, but the long-term payoffs are much greater, experts say.

"If I compare the storage costs of buying servers [and managing them] on a server-by-server basis and the costs of buying a SAN and managing it from a centralized place, the purchase cost is maybe four times higher with a SAN, but the total cost of ownership is about half," says Bob Passmore, an analyst at Gartner Inc. in Stamford, Conn.

Don Cawthorne is a user-turned-vendor who was working at Northern Trust Bank in Chicago five years ago when it decided to build a SAN infrastructure. SANs were still in their infancy at the time. Cawthorne budgeted $1.7 million for about a half-dozen servers. Today, a SAN for six servers would cost a fraction of that amount, says Cawthorne, who is now director of SAN architecture at SANcastle Technologies Inc. in San Jose.

Still, what goes into a SAN now depends on factors such as how large a network is and the class of equipment to be used. "Cost is driven very much by the complexity of the situation," Passmore says.

However, users often find that the cost savings they accrue are well worth the price. They also report intangible benefits, such as having more floor space available in the data center after converting to a SAN.

Anthony Lloyd, vice president of computer operations at motion picture company Warner Bros., recovered about 35% of his data center's floor space when he installed four SANs. This will allow for better planning as he brings in more hardware, he says.

Cashing in on SANs

Experts say that if you're looking to save money with a SAN, do the following:

TALK WITH OTHER USERS of SANs at companies that are similar to yours in terms of size and storage requirements. Don't base your projected savings on a vendor's estimates of total cost of ownership.

AVOID COMPARING the implementation and operating costs with those of other storage systems, such as network- and direct-attached storage.

STRONGLY CONSIDER using SAN management software to capitalize fully on a SAN's cost-cutting potential.

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>
> **DAVID CYGANSKI, PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING, WORCESTER POLYTECHNIC INSTITUTE**

Although it's nice to have extra floor space, users, analysts and vendors say the real advantage of SANs comes from better management of storage.

Before implementing SANs at New York-based Warner Bros., Lloyd had problems projecting what his storage needs and costs would be. "We were immediately able to fix that in the SAN environment," he says. What's more, he estimates that a total investment of about $1.3 million has already yielded about $700,000 in savings over the past year as a result of less downtime and more efficient use of resources.

Now Warner Bros. procures new storage every quarter instead of almost every week. And Lloyd says that because he buys in bulk, he gets better discounts. He also generates monthly reports for business departments to show them how much storage they have available, how much they've used and how much the additional storage will cost them.

The bottom line, analysts say, is that a company can save money relatively quickly by implementing a SAN, but how much will vary from user to user.

"The cost reductions come in terms of storage management and higher availability," says Arun Taneja, an analyst at The Enterprise Storage Group Inc. in Milford, Mass. "Your data's available all the time; it's not crashing. There's easier storage management, easier implementation of storage applications. Any costs you invest [in SANs] are oftentimes recovered in a matter of months, not years." ◗

Pratt is a freelance writer in Waltham, Mass. Contact her at markmary@mindspring.com.

MAKING A SAN ASSESSMENT

What does it cost to buy and install a SAN? Check out this breakdown of hardware, software and other costs.

QuickLink: 30651

For links to additional SAN resources, visit our Web site.

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GOOD INTENTIONS

IT volunteers gain new skills and experience but rarely score a new job. **By Melissa Solomon**

WHEN Catherine Bohill and her fiancé, Jason Long, volunteered to work in Cuba for a year, they weren't shooting for typical IT work — and they didn't get it. What they got to do, including buying computers for Cuban orphanages and managing sonar on a ship scouring the Caribbean for buried Spanish colonial era treasure, was a far cry from the IT jobs they left at Nortel Networks Ltd. and DaimlerChyrsler AG in Germany.

"What's the point of slaving away day after day when you have another wish in the back of your mind?" asks Bohill.

For most IT workers who share that sentiment, the idea of taking a hiatus from office life to go off and do something like build a database for a homeless shelter would be just a far-off dream. But as more of those workers find themselves jobless in an unrelenting market, some are living out such dreams to keep active and, possibly, to boost résumés or score some contacts that could lead to jobs.

Those who have ventured to and from the nonprofit world say the experience is worthwhile in terms of personal growth as well as IT skills development. But it's not necessarily the way to go about securing a new corporate IT job, especially in a tough market.

"I was looking to do good, but I was also looking to do good for myself," says Mark Santino, 48, who was laid off from the New York office of London-based smart-card firm Mondex International Ltd. He updated his résumé to include his volunteer work building a large-scale technology plan at New York Cares Inc., which provides temporary volunteers for nonprofit projects throughout the city. But, he says, "I've not really gotten anything out of it in terms of a job or a new client."

WHAT TO EXPECT

Volunteering has its ups and downs. Here are a few of them:

What You'll Gain

- Greater responsibilities
- Personal gratification
- The chance to broaden your IT and problem-solving skills

On the Downside

- Nonprofit groups often have few resources, creating barriers to success
- Too much time out of the corporate world can be a turnoff to potential employers
- Volunteering can distract from a job search

After their year in Cuba, Bohill, 29, and Long, 33, were fortunate enough to land jobs within a few weeks after arriving at their latest destination: Spain. Both are working at wireless firms in Madrid. Bohill says that likely had more to do with their overall corporate IT work experience than their philanthropic work in Cuba.

Linda Hodges, executive vice president at Hersher Associates Ltd., an IT recruiting firm in Northbrook, Ill., says she wouldn't recommend volunteer work to job-seekers because it can distract them from the very complex process of finding work, especially in this market.

"Finding a job is a full-time job," she says. "Go for it 100%, rather than diluting your efforts on other pursuits."

Volunteer work might not produce returns as tangible as a new job. But it can help strengthen one's long-term IT career by building technical and project-management skills, as well as by recharging workers who have grown disillusioned with the climate and pace of corporate life.

As a consultant at Accenture Ltd.'s New York office, Dayna Graham worked on teams to help IT departments in finance companies with business-process design plans. Last year, Accenture offered workers partially paid, temporary sabbaticals to try to avoid companywide layoffs and suggested the option of volunteering at NPower NY, a nonprofit organization that provides technology assistance to other nonprofit groups in the city. Graham jumped at the chance.

Personal Growth

While at Accenture, Graham says she worked on projects run by people with more experience. During her year-long stint at NPower, which ends in August, Graham has been able to lead entire projects. She's now running NPower's training department for employees of nonprofit groups. Graham arranges the logistics of the program, develops curricula and teaches courses on everything from Microsoft Office to Web site design.

"I've increased my technology skills tenfold," she says.

There's also less pressure to meet tight deadlines and achieve perfection because projects aren't as complex and expectations aren't as demanding as they are with multimillion-dollar corporate projects, adds Farhana Ahmed, another Accenture consultant who did a four-month stint at NPower, where she learned Web development while creating an online database of Sept. 11 corporate donors.

Santino says just making new acquaintances at New York Cares has helped him come out of his shell. "Being a technician, I just wanted to do what I wanted to do and be left alone," he says. "It's been nice to turn that around."

Volunteer work also teaches creative problem-solving because workers must make do with limited resources, says Grace Kong, who manages New York Cares' technology programs.

For Bohill, being in Cuba was an experience of a lifetime, but she says she's happy to be back in the corporate world. "I very much enjoy my work now and appreciate having a mobile phone again and a laptop," she says. ◗

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Wanted: CTOs Who Can Follow The Money

Knowing numbers is right up there with knowing networks. By David Joachim

HOW QUICKLY THE TIDE CHANGES. Just a few years ago, technology projects seemed to be getting all the attention, and chief financial officers were under pressure to increase their technical know-how. Now CFOs are leaning on technology chiefs to improve their financial acumen as they demand accountability for promised investment returns.

So says a group of CFOs who were asked to assess how their technical peers are adjusting to added management scrutiny of IT budgets. Some say they now view an understanding of finance and accounting as an important checklist item for top-level technology recruits.

Comfort with numbers and return-on-investment disciplines was a vital criterion when ProLogis Trust, a real estate investment trust and operator of regional distribution facilities in Aurora, Colo., picked a new chief technology officer 18 months ago.

"We purposely hired someone with not only good technology skills, but someone who could also speak return on invested capital," says CFO Walter Rakowich. "If you have a person driving that group [who's] thinking numerically, that's the CIO of the future."

Rakowich and CTO Timothy Harvie meet three or four times a week. For any IT investment of more than $100,000, Harvie must demonstrate how the project will produce a 20% return on investment capital, beyond depreciation, in three to five years, Rakowich says.

An internal audit department reviews the investment papers drafted by Harvie and tracks progress quarterly. This review process has been in place for about three years, Rakowich says.

Full participation in financial matters is a growing trend among top technology managers. Today's CIOs and CTOs are treated more like business unit chiefs than like heads of corporate functions such as human resources or customer service, says David Mark, a partner at McKinsey & Co., who heads the New York-based firm's North American IT management practice. That means that they act as partners with business units and are partly responsible for the profits and losses of those units, he says.

PROLOGIS CFO Walter Rakowich (left) and CTO Timothy Harvie are in sync on IT investments.

"It feels like IT still has the strategic importance it had during the technology boom, but it's now being combined with the financial discipline of before the boom," Mark says. "In some sense, it's a maturing of the whole decision process around IT."

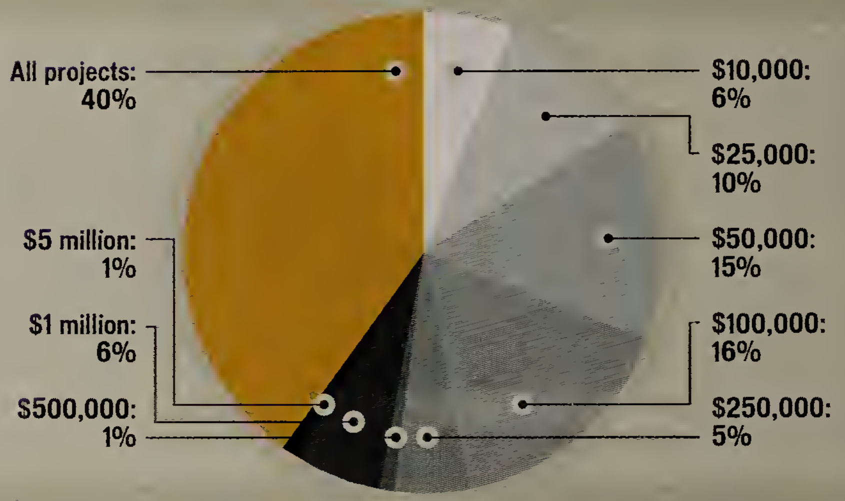
In a way, the burden of molding financially savvy CIOs is on the CEO, who sets the organizational structure. Rakowich says he believes CIOs and CTOs are more comfortable with finance and ROI if they report to the CEO rather than to the finance chief. Those who report to the CFO miss out on high-level interactions with other executives and exposure to the financial discussions surrounding important projects, he says.

Harvie "is in on meetings and sees that the company is driven by return on invested capital," says Rakowich. "He knows how to convey those thoughts to other levels in the organization. Without that, he and I would be like two ships passing in the night."

No Expense Too Small

Two of every five companies require ROI/cost justification on all IT infrastructure projects.

What is the minimum size IT infrastructure project for which you require ROI/cost justification?



SOURCE: FORRESTER RESEARCH INC. SURVEY OF 204 SENIOR EXECUTIVES AT U.S. COMPANIES, DECEMBER 2001

A Step Back?

But at least one CFO sees things differently.

"I've been seeing IT going more and more into the back room as a cost center, whereas for a time it was more upfront in a profit-center approach," says Fred Minturn, CFO at MSX International, an auto industry design and engineering services company in Southfield, Mich. "IT is just a tool for everyone to get their work done. It is a commodity within the business."

Donald Barger, CFO at worldwide trucking giant Yellow Corp. in Overland Park, Kan., refuses to make a distinction between IT and other corporate functions such as finance. "Specific to ROI, we don't treat IT any differently," Barger says. "If someone is trying to make a distinction between measuring IT projects vs. other types of projects, I think they're a little off base."

Barger, employing a practice that's used even in better economic times, insists on seeing any project plan with expenses of more than $50,000, including labor. As Draconian as that may seem for a $3.3 billion company, Barger says he views IT as vital to Yellow's logistics tracking and the reduction of labor throughout the organization.

IT is also responsible for several revenue-producing activities, including a Web-based service called Exact Express that promises on-time delivery according to customer specifications, including one-hour or same-day service to any location in North America. It has a 98% success rate, according to Yellow.

Barger and CTO Lynn Caddell meet at least weekly. Both report to CEO Bill Zollars.

McKinsey's Mark says that despite the greater financial scrutiny of IT projects, more CIOs and CTOs are reporting directly to the CEO. And that's forever changing the relationship between finance and information chiefs.

The budgeting process is "no longer an exercise where the CIO sets the budget and the CFO reviews it," Mark says. "Because the CIO and CFO are both leading an important function in the company, their two roles tend to be more intertwined than in the past." ◗

Joachim is a freelance business and technology journalist in Port Jefferson, N.Y. Contact him at djoachim@optonline.net.

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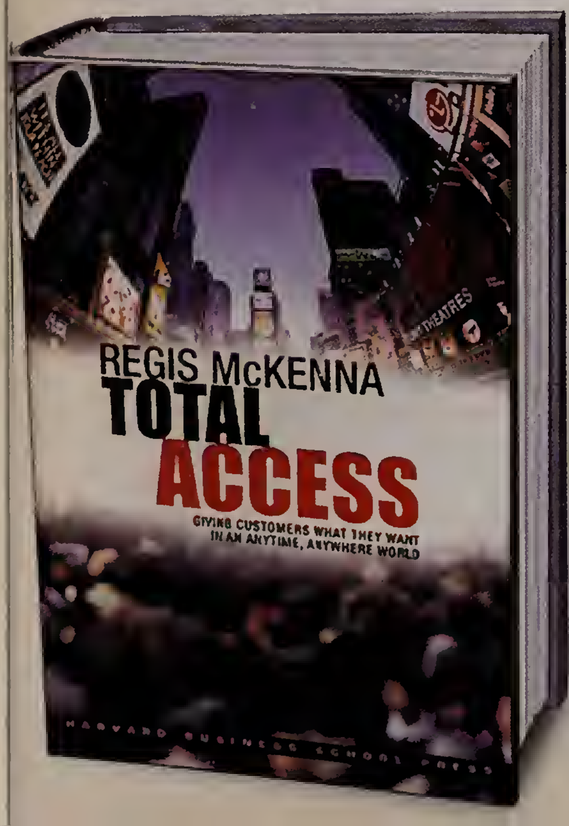
Summer Reading

Tom Clancy novels they're not. But here are eight new titles to boost your IT and business knowledge.

BOOK REVIEWS

■ **Total Access: Giving Customers What They Want in an Anytime, Anywhere World**, *by Regis McKenna (Harvard Business School Press; 226 pages; $27.50).* This is a must-read for CIOs and CIO wannabes. McKenna, the Silicon Valley marketing guru who has written four books on technology business strategies and marketing, focuses on how marketing is evolving from a "broadcast" paradigm — the sending of one message to many — to one in which many messages are tailored and sent to individual customers. The hook for IT here is that McKenna devotes a good chunk of the book to the technologies that will enable this transformation and the roles that corporate IT and the CIO will play in it. It's just one example of how IT is evolving from an insular support role to one that requires it to branch out, even beyond company walls, to interact with customers and help drive revenue.

— Rick Saia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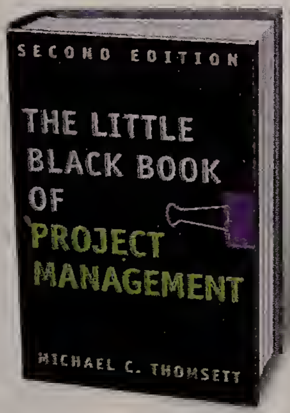
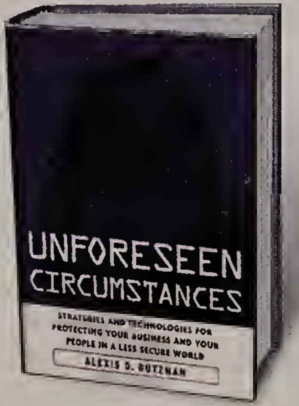


■ **The Little Black Book of Project Management (Second Edition)**, *by Michael C. Thomsett (Amacom Books; 200 pages, paperback; $15).* Thomsett, a widely published author on the subjects of business, finance and project management, updates his 1988 work. The book is a quick read and covers all major steps of project management, from creating the project plan to conducting the project review. Thomsett includes examples of project management scenarios, as well as sample charts. At a time when management wants better cost controls and quicker returns on investments, IT managers should find great value in this book.

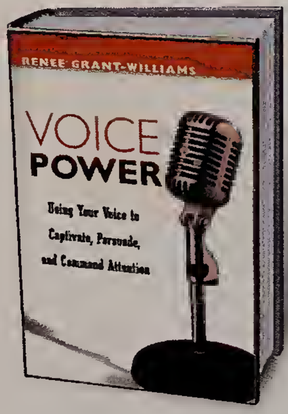
— Rick Saia

■ **Unforeseen Circumstances: Strategies and Technologies for Protecting Your Business and Your People in a Less Secure World**, *by Alexis D. Gutzman (Amacom Books; 224 pages; $25).* If hard-drive-hungry viruses and highly publicized corporate security breaches weren't enough of a call for companies to beef up their security strategies, the Sept. 11 attacks should have been.


UNFORESEEN CIRCUMSTANCES
STRATEGIES AND TECHNOLOGIES FOR PROTECTING YOUR BUSINESS AND YOUR PEOPLE IN A LESS SECURE WORLD
ALEXIS D. GUTZMAN

In this well-researched and easily digestible tome, Gutzman examines topics ranging from unconventional security threats to choosing the best biometric technologies for your organization's needs. But Gutzman goes beyond traditional security matters and explores issues such as the debate over face-to-face meetings vs. virtual meetings (teleconferences and videoconferences), which companies are considering turning to as they cut back on travel for budgetary and security reasons.

— Thomas Hoffman

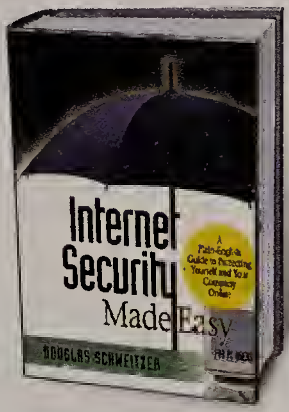

RENEE GRANT-WILLIAMS
VOICE POWER
Using Your Voice to Captivate, Persuade, and Command Attention

■ **Voice Power: Using Your Voice to Captivate, Persuade, and Command Attention**, *by Renee Grant-Williams (Amacom Books; 197 pages, paperback; $17.95).* If you're in a leadership role in which effective public speaking skills are essential, you probably know that sometimes it's not what you say but how you say it that carries the greatest impact on your audience. Grant-Williams, an acclaimed voice coach who has worked with singer Linda Ronstadt and U.S. Attorney General John Ashcroft, offers useful tips on how to seize an audience's attention, including the use of the "power pause" between phrases, and on differentiating between "filler words" such as *the, and, that* and *but*, and "money words" such as *help.*

— Thomas Hoffman

■ **Internet Security Made Easy (for PC users)**, *by Douglas Schweitzer (Amacom Books; 270 pages, paperback; $24.95).* With Internet use and information security awareness on the rise, readers should find this book valuable. It's written for managers, business owners and home users, offering actionable advice to help guarantee online security. It also presents technical information that's important for experienced IT professionals. Schweitzer, an IT professional with several industry certifications, also provides practical, understandable advice in areas such as configuring Web browsers for optimal security and monitoring and removing cookies.

— Rick Saia



■ **F'd Companies: Spectacular Dot-Com Flameouts**, *by Philip J. Kaplan (Simon & Schuster; 180 pages; $18).* Kaplan, the founder of F----dCompany.com, a Web site that highlights bad corporate judgment, has come out with an equally irreverent list of dot-com companies, most of which have gone toes-up since Kaplan launched his Web site in 2000. A common thread in the book is that many of these companies were pushing solutions in search of problems, so the lesson here is to not repeat the mistakes that Kaplan details in his cynical and irreverent, yet gregarious, writing style. If you don't mind reading the *F* word as well as a few other expletives, you'll learn, you'll laugh, and you might even cry.

— Rick Saia

Other books you might want to read:

■ **Pride Before the Fall: The Trials of Bill Gates and the End of the Microsoft Era**, *by John Heileman (HarperBusiness; 263 pages, paperback; $14.95).* Heileman has added a 20-page epilogue to the book he released last year on the landmark antitrust case. He chronicled the antitrust trial thanks to wide access to both the company and the U.S. Justice Department. The epilogue covers events after the original decision by Judge Thomas Penfield Jackson.

■ **The Hacker Diaries: Confessions of Teenage Hackers**, *by Dan Verton (McGraw-Hill/Osborne Media; 212 pages; $24.99).* Verton, a former Marine intelligence officer, is a senior writer at *Computerworld* who specializes in security issues. For this book, he interviewed current and former teen hackers, along with law enforcement officials and criminal psychologists. The book explores the hackers' motivations and opens a door into the teenage hacker subculture. IT professionals responsible for security might use this book as a way to get to know the "enemy."

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Dear Career Adviser:

I am a programmer/systems administrator with a broad background and want to stay positioned for changes in technology and skills. I have been reading a lot about Linux and mainframes being used in combination. Is this a good area to get into? — SINCERELY CONFUSED

Dear Confused:

Few Unix jobs in the business world involve Linux, the open-source version of Unix. Most — 90% — involve proprietary Unix versions such as Sun Solaris, HP-UX and IBM AIX running on workstations, says Cliff Miles, president of Clifford Associates Inc., a technical recruiting firm in Newtown, Pa. And remember that companies are really hiring only people who exactly match the technical and soft skills they are seeking.

And, while the combination of Linux and mainframes might make you stand out in a niche market that has fewer candidates than other areas, you should learn versions of Unix used on workstations.

Research which industries and companies are still expanding and hiring. Look for core niches that survive down markets, such as direct-mail marketing companies aimed at reaching people more effectively at lower costs, or security and disaster recovery companies. This double focus should enhance your search.

Dear Career Adviser:

After a long career in one industry, I decided to take the plunge and learn Visual Basic. I already knew how to program, and the language was really simple to learn; logic is logic, after all. I'm wondering, would it be worthwhile to have my résumé written by a pro for a cost of $200?

— RÉSUMÉ REWRITE

Dear Rewrite:

A résumé that will help you get a job in the Visual Basic world would have to demonstrate that you know the techniques that Visual Basic uses to connect to databases, says Michael A. Brown, the Chapel Hill, N.C.-based founder of Pure Power and VisualBasicJobs.com. Therefore, in addition to Visual Basic, you also need a strong understanding of Microsoft SQL and relational databases.

Given the experienced Visual Basic talent available in today's highly competitive job market, spending $200 to rewrite your résumé probably won't increase your edge. What is key, however, is experience with Microsoft Corp.'s new .Net technologies, including ASP.Net, Microsoft's new scripting language for Active Server Pages. Thus, learning Visual Basic is a foundation to learning Active Server Pages and .Net technologies.

Finally, with your particular industry experience and Visual Basic skills, head not toward development but toward project manager jobs, says Brown. Here, your experience plus your new Visual Basic skills might give you an edge in helping to navigate between the end users of applications and the technical team developing them. ▶

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

WORKSTYLES

Innovation Drives BorgWarner IT

IT innovation is recognized as crucial to the continuing success of drivetrain manufacturer BorgWarner Inc., says Paul Barry, director of IT network systems at the Chicago-based company. The problem is finding enough "think time" to come up with new ideas, he says.

What are the most critical systems supported or developed by your department on a daily basis? "There are six main divisions in the company, and each has a corresponding IT group. I've got five people on the network systems staff, which works out of the corporate office. My staff focuses on planning, strategy and standardization, although we do hands-on support for the core network. We also support and design all connectivity and do security from a corporate perspective."

How would you describe the pace of the work? "It's very steady. We're not doing rocket science here, but there's a lot of dancing around because of our customers, who are very few and very big. You might do mundane stuff 30% of the day, and the other 70% you're looking at a software upgrade or new-technology deployment."

How would you describe the overall IT culture? "There's a lot of personal interaction among the IT staff and the people they serve. And we do talk quite a bit amongst ourselves in conference calls and meetings, and we rely on each other a lot for help. But we're still dispersed, so we're not all sitting around the server singing 'Kumbaya.' "

What do you like best about how career advancement and training are handled? "Human resources actively posts positions on our intranet site, so people with an IT background who aren't in IT have the opportunity to apply internally for jobs. My intranet manager is an engineer from the transmission facility.

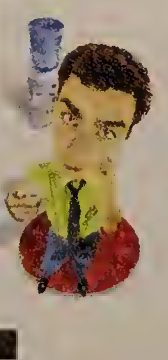
"We also do a good job of sharing knowledge. I have a guy with Cisco CCIE [Cisco Certified Internetwork Expert] certification, and he's going to conduct some training classes."

What do you think makes your company's IT department unique? "The productivity and positive attitude. BorgWarner has developed itself as a tightknit, conservative and highly productive company that's proud of what it does, and as a result, there are not are not a lot of whiny people around. The user population respects the level of work we're putting in, and they're not unreasonable in their demands, so we have a lot of service-oriented IT people willing to climb the wall for them."

Where do you think this attitude comes from? "Several years ago, we decided to be the No. 1 or 2 manufacturer in our markets, and we prided ourselves on engineering development. We're not the biggest technology manufacturer around, but boy, when we engineer a product, it's a damn good product. As a result, we service the engineering groups as the Holy Grail of the organization. Everyone in the organization knows we can't be product leaders without constant innovation and constant technology milestones."

What aspect of work do you dread each day? "The 'admin-istrivia.' I get 15 to 17 vendor cold calls a day that I have to screen out, and when that happens, I lose the think time, and that's where we lose the innovation."

– Mary Brandel
brandels@attbi.com



BorgWarner Inc.

Who they are: A manufacturer of highly engineered components and systems for vehicle drivetrains

Main location: Chicago

Number of IT employees: 200

Interviewee: Paul Barry, director of IT network systems

Software Engineer

SchlumbergerSema is seeking a Software Engineer for our office in the Atlanta, Georgia area for design, analysis, implementation, documentation, testing, debugging and maintenance of object-oriented applications using C++, Java and Perl on Windows and Unix workstations; object oriented modeling using UML and the Rational Unified Process; database management using ObjectStore and Oracle; use of profiling tools and source code versioning tools and software. Requires: Master's degree in engineering or a computer-related discipline and one year of industry experience in software design. Please send resume to: SchlumbergerSema, Attn: Personnel Dept. #RM/04, 75 Shoreway Road, San Carlos, CA 94070. See our website at www.slb.com. E.O.E.

Software Engineers needed: Design, test, install and configure software systems. Build client server applications. Work with 3 of the following SOL Server, Java, Silver Stream or Visual Fox Pro. Requires BS degree or equivalent and/or relevant work experience. Mail resume, references and salary requirements to: Ruscomp, Inc., 12765 W. Forest Hill Blvd., Wellington, FL 33414.

Software Engineers (multiple positions) sought by computer s/w consultancy firm in Columbia, MD. Must have Bach in Comp Sci., Engg or equiv and one yr relevant exp. Respond to: HR Dept, S&S Business Systems, Inc., 10015 Old Columbia Road, Suite B-215, Columbia, MD 21046.

Prog/Analysts to analyze, design, develop enterprise level scientific appls using Java, J2EE, HTML, JMS, JDBC, Servlets, Oracle, ASP, SOL Server, and Windows NT/2000, UNIX OS; perform weblogic server admin; conduct user requirement/feasibility studies, systems analysis, database design, coding, implementation, documentation, maintenance, support, unit and system testing of complex scientific systems and applications. Require BS or foreign equiv in CS or Engg (any branch) with 2 yrs exp in IT. High salaries. F/T positions. Travel to client sites within the US. Resumes to Salem Associates, Inc. 7074 Peachtree Industrial Blvd, Suite 210, Norcross, GA 30071.

Computer Systems Analyst wanted for the design and development of computer software systems and coordination of database development as part of a project team, applying knoweldge of computer science, science, and engineeering; reviewing project request to determine client needs; determine if project requires creating series of new programs or modifying existing programs; implement and test system. 40 hrs./week. 8am to 5pm; $ 64,400 per year; Must possess Master's Degree in Engineering, Computer Applications,Computer Science or Science; Must possess two years of experience in job offered or as Systems Analyst. Employer Paid Ad. Please send resumes to MCDC/ESA, P.O. Box 11170, Detroit, Michigan 48202. Reference No. 202114.

SYSTEMS ANALYST/FINANCIAL ADMINISTRATOR to design, develop, test, support & maintain computer systems to administer company payroll, time records and benefits; Maintain documentation of all financial transactions so as to provide pertinent financial info. to tax and corporate accountants. Require: Bachelor's degree (or foreign equivalent) in Mgt. Info. Systems, Comp. Info. Systems, or a closely related field, with 2 years of experience in the job offered or as a Systems/Business Analyst. Competitive salary & benefits. 8a-5p, M-F. Send resume to: David G. Venters, P.E., President, Eproject.Net, Inc., 5711 Richard St., Suite 1A-2, Jacksonville, FL 32216 (No Phone Calls Please)

S/W Engineers to manage teams to analyze, design, develop and support applications on COBOL, C, C++, VB, Oracle, MS SQL Server, SOL, EGRET, EPI-INFO etc under UNIX and Windows OS; design and develop object oriented e-commerce applications using J2EE architecture, Java, XML, Servlets, EJB and JSP; enhance and maintain online and batch applications; evaluate team members and guide team by providing methodologies to be followed; interact with the clients. Require M.S in CS/Science / Engg (any branch) with 3 years exp. B.S. or foreign equiv with conc in any of the above with 5 years of relevant progressive exp will also be accepted. Highly paid position. Travel involved to client sites. Resume to Salem Associates, Inc. 7074 Peachtree Industrial Blvd, Suite 210, Norcross, GA 30071.

Programmer Analyst- 2 positions: Analyze user requirements, procedures & problems to automate processing & reports, identify problems & modify coding. Use C + +, C, Java and OOP. Design, dev. and implement Intranet and internet based applications. Dev. API/Middleware for various Oracle based applications. Req. BS/BBA in CS /Accounting OR functional equiv. plus 2 years of experience. Please send resume to Orient Inc. C/O Hampton Inn, 153 Hampton Ct., Commerce, GA 30529.

Web Administrator- Design, deploy, support, & troubleshoot servers. Install & configure web applications. Design, validate, enable, & implement web hosting service projects. Must have a Bach.Deg. in Comp. Science, Eng'g, or related discipline,2 yrs. exp. in the job offered or as a Systems Engineer or Systems Administrator, & exp. with WindowsNT, SOL, & Unix. Send resume to: Rich FX, 1450 Broadway 18th Floor, New York, NY 10018. Attn: Harry Plonskier

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Computer Science Instructor sought by Sullivan Colleges System at its Louisville, KY campus to teach multiple courses in the Computer Science Department. Bachelor's degree in Computer Science or related field required. At least one year related teaching experience required. Send resume to V. Godwin, Sullivan Colleges System, 3101 Bardstown Road, Louisville, KY 40205.

Computer Programmer who will plan, develop, document and assure quality of computer programs and systems using working knowledge of RUP methodology using Rational Suite (Rose 200e, Clear Ouest, ClearCase, Requisite Pro, SoDA), EDI, IDX, RTI, Webforms, WebMethods, Datatect, Ouest TOAD, JUnit, JBLITZ, Real Validator, Load Runner, Win Runner and SOL. Will work on Palm OS, RPT, RPGILE, CL, S/360-390, AS/400, Sun Solaris, Novel Netware and Windows NT/95/2000/XP. Applicant must have at least two years work experience as a Computer Programmer. Applicant must have extensive experience using Rational Suite (Rose 200e, Clear Ouest, ClearCase, Requisite Pro, SoDA), Ouest TOAD, Palm OS, Datatect, JBlitz, JUnit, Real Validator, SOR, Load Runner, Win Runner, EDI, IDX, RTI, Webforms, WebMethods, ILERPG, Sun OS and Java Load/Star/Spec/Scope. Work involves extensive travel and frequent relocation. $66,500/year, 40 hours/week, 9:00am-5:00pm. Send resume, listing Job Order Number WEB 244532, to Fayette County Team PA CareerLink, ATTN: JS Supervisor, 32 Iowa Street, Uniontown, PA 15401-3513.

Computer Programmer II to code, test, and debug application programs using Java/J2EE, SOL, XML, DHTML, JSP and Java Script; and to program EJB using Java with J2EE specifications, and program PL/SOL packages and JDBC queries in Oracle database, and create web interface with DHTML, JSP and JavaScript. Must have a Master's degree in Computer Science, Engineering or a related field and proficiency in Java, SOL, XML. 40 hrs/wk. Send resume to James Cappola, E-Certify, 3025 Windward Plaza, Suite 200, Alpharetta, GA 30005. Ref. Code: GA-ZW.

SOFTWARE ENGINEER:
Research, design and development of computer software systems, in conjunction with hardware product development, applying principles and techniques of computer science, engineering and mathematical analyses; analyses of software requirements to determine feasibility of design within time and cost constraints; consults with hardware engineers and other engineering staff to evaluate interface between hardware and software and operational and performance requirements of overall system; formulates and designs software system, using scientific analysis and mathematical models to predict and measure outcome and consequences of design; develops and directs software system testing procedures, programming, and documentation; consults with customer concerning maintenance of software system; coordinates installation of software system. Requires Bachelor Degree in Computer Science, Engineering or a related field. Work 40 hours per week, M-F, 8-5. Position available in Charlotte, NC. Send Resumes to Dana Chappell-Stephens, WebTone Technologies, Inc., 3390 Peachtree Road #600, Atlanta, GA 30326

Systems Analyst: Dev. Systems for tech. app.; Program in FoxPro,VB, Clipper, MS Access, MS SOL Server, Informix DB, System integration between PC & AS/400, Using Cobol, RPG/400, C/A, DB/2 knowledge of Windows 9X, NT, XP, 2000, Novell Netware, 5250 emul, experience in Drivers scheduling, manufacturing systems. Req. planning, evaluation, and develop user requests for new, modified existing programs using programming techniques & computer expertise, increasing operating efficiency or adapting to new req., oversee inst. of HW & SW, monitor programs performance SP. 5 yrs exp. in job offered. Fax 305-819-1510.

Senior Programmer Analyst, Messaging Services, position requires project management skills, gathering requirements, analysis, design, coding, testing, implementation, and maintenance of MO Series COBOL programs. Provide client support and assume on-call responsibilities with minimal or no supervision to support Messaging Service systems. Assist junior programmers in becoming more active participants in maintenance functions. Must have at least five (5) years of experience with IBM mainframe programming in a senior level capacity, during which the following skills were regularly used: COBOL II, DB2, IMS DB, CICS, VSAM, SOL/DS, JCL, TSO, SYNCSORT, FILE-AID, ENDEVOR, WIN NT/2000 including two (2) years experience in credit card processing and one (1) year of experience in conversions and TSYS TS2 processing.

Hours: 8:30 a.m. to 5:30 p.m. Monday – Friday. Salary: $59,518 per year. Must have indefinite right to work in U.S. Send resume demonstrating all requirements to TSYS. Attn: Elizabeth Bennett, 1000 – 5th Avenue, Columbus, Georgia 31901

Software Engineers needed. BEC Consultants, Inc. is seeking qual. candidates possessing BS or equiv. in Comp. Sci. or related & 5 yrs. relevant work exp. Design & build interfaces from web to databases. Exp. must include 2yrs. working with IDMS. Must be willing to travel & relocate as required throughout the US. Mail resume, references & transcripts to: BEC Consultants, Inc., Attn: HR 633 Post St., #340, San Francisco, CA 94109.

Systems Analysts to :
--Analyze, design, test client server appls using ASP, VB, HTML, COM, DCOM, XML, SOL Server etc under UNIX/Windows OS; identify and implement industry's current 'best practices'; set up development environments, identify and resolve issues; troubleshoot appls and prepare documentation.
--Analyze, design, develop and support client/server appls using PB, Sybase, Oracle and MS SOL Server on Windows/UNIX OS; evaluate user requests for enhancements to existing programs and create new programs; participate in project development including writing req design, proto typing, coding and unit testing. Require Bachelor's degree or foreign equiv in CS, Business Admin, Engg (any branch) or related field with 2 yrs exp in IT. Highly competitive salaries. Travel involved to client sites. Resumes: Synergy America, Inc, 1565 Woodington Circle, Suite 101, Lawrenceville, GA 30044.

Enhance your career possibilities with ALLTEL Information Services, Inc. We currently have an opening for a Programming Supervisor in San Diego, CA. Resp. include managing design, development, testing, documentation and analysis of ACBS software systems in the AS/400 environment. Oualified individuals must have appropriate degree and relevant experience including. 2 yrs. of exp with ACBS software. Please fax or send resume with references to Doug Opdycke at ALLTEL Information Services, 12250 El Camino Real, Ste 140, San Diego, CA 92130; Fax: 858-793-3026.

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Programmer Analyst - Design, develop, test, and implement application software systems. Work environments include Oracle database, C++, PL/SOL, Java, Developer 2000, Informix, SQL Server, Unix, Windows NT, and Peoplesoft packages, Peoplesoft HR Management, and Peoplesoft Financial. Reqs: Bachelor's degree or its foreign equivalent degree in Science or Engineering and 2 years experience in the job offered or in a related occupation as a Software Engineer, Computer Programmer, ERP Consultant, or Peoplesoft Consultant. Will accept 3 years college education in Science or Engineering plus 3 years experience in the job offered or in a related occupation in lieu of the requirement of a Bachelor's degree and 2 years experience. Must have 6 months experience with Peoplesoft Financial, Peoplesoft HR Management, Oracle Database, PL/SOL, and Informix. $66,828.70/year, 40 hrs/wk, 8a-5p, M-F. Job location: various unanticipated locations throughout the U.S. but most of the time in Pennsylvania. Mail resume to JS Supervisor, Greene County Team PA Career Link, 4 West High Street, Waynesburg, PA 15370-1324, and refer to reference number WEB 252772.

System Analysts (multiple positions) sought by computer s/w consultancy firm in San Jose, CA. Must have Bach in Comp Sci., Engg or equiv and one yr relevant exp. Respond to: HR Dept, Yash Solutions, Inc, 1233 Hazlett Ct, San Jose, CA 95131.

Computer, Info Systems (Asst Mgr)--Maintain, develop & implement new programs for Acctg Dept that consists of computational engines & client software. Maintain & support distributed database for finan apps that contains descriptions of more than 20,000 different finan instruments & requires 50-200 security updates daily. Program/test/fine tune software in various environments. Develop/maintain communications software for client-server & distributed apps using Sybase as it relates to SQL servers & Jaguar CTS. Design/develop/support interfaces for finan apps & graphical interfaces using PowerBuilder & PowerJ dev tools. Req Bach or foreign equiv in Comp Sci, Engin, or Math + 2 yrs exp in job or 2 yrs exp as client/server developer or programmer/analyst. Related exp must include Sybase as it relates to SOL server, Jaguar CTS, PowerBuilder & PowerJ. M-F 8-5 p.m. Resumes to Paloma Partners Management Co., Attn: Michael Bemer - Exec VP, 2 American Lane, Greenwich, CT 06836.

Senior Mechanical Engineer
Design & develop cable and connector products based on USB & IEEE1394 Technology by using AutoCAD and Soildworks software; supervise & monitor the QA & RMA process to support the production, sales and marketing personnel on technical specification & custom projects. BS in Mechanical Engineering plus 5 yrs exp. In the job offered. Send resume to President Sam Liu, Newnex Technology Corp, 1190 T Miraloma Way, Sunnyvale, CA 94085.

NETWORK ANALYST

West Suburban Chicagoland area. 40 hours per week; no overtime; 9:00 A.M. to 5:00 P.M. , $82,430/year; Shall design and implement LAN/WAN Network systems. Install, support and troubleshoot Windows NT/2000 servers using DNS, DHCP, WINS and Dynamic DNS communication protocols. Install 3-Com/Cisco switches/hubs and routers using RIP or OSPF Routing Priority Algorithms/tables to attain network routing efficiency. Manage gateways switches, routers and TCP/IP Protocol Architecture. Monitor network using HP OpenView/Sniffer and Whatsup Gold Network Management Tools. Analyze, identify and troubleshoot data communications problems related to networking hardware and software. Design and setup systems backup devices using Legato Tape Backup. Write program codes in Unix to automate systems backup.

8 years grade school; 4 years high school; Bachelor's Degree in Computer Science or equivalent required; No minimum training required; 2 years experience in job offered or 2 years experience as Network Analyst required.

Applicants must show proof of legal authority to work in the U.S. Send resumes to:

ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North Chicago, Illinois 60605 Attention: Brenda Kelly Reference #V-IL 32590-K AN EMPLOYER PAID AD NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER

Prog/Analysts needed nation wide may req travel/reloc. Need Bach + 2yrs exp in skills: 1st req's VB, ASP, python; 2nd req's IBM mainframe, Cobol, VSAM, DB2, JCL, Assembler. Send resume to Future Tech Consultants LLC, P.O. Box 921516, Norcross, GA 30010

ERP Systems Technical Administrator. Sys. admin. for data center, Sun/Solaris, MS NT/2000; Oracle & MS SQL DBA; maintain patch level of Oracle & MS-based ERP & clinical s/ware sys. BS in Comp. Sci. or MIS. 2 yrs exp In sys. admin. of Sun/Solaris & Intel/MS platforms, MS-based web apps.; DBA for Oracle & MS SQL d/bases. MS SQL, Oracle DBA, & MS Certified Sys. Eng. & Internet certifications reqd. Send resumes to Lise Everly, 400 Locust St, Ste 820, Des Moines, IA 50309.

Software Engineer with Masters in Computer Science wanted in Houston, TX. Respond to: HR Dept., American Shengli Int'l Energy Service Co., Inc., 4418 Sweetwater Blvd, Houston, TX 77479.

Technical Staff (Software Engineer), wanted for data management company seeking solutions for healthcare. Requires B.S. in Comp. Sci. plus 2 years exp.

Please apply to hr@medplus.com

MedPlus, Inc., 8805 Governors Hill Drive, #100, Cincinnati OH 45249.

Senior Programmer Analyst wanted for the research, design and development of computer software systems applying principles and techniques of computer science, science, commerce, and mathematical analysis, using COBOLII and other computer software and operating systems. 40 hrs./week; 8 am to 5 pm;$54,600 per year; Must possess Bachelor's Degree in Engineering, Commerce or Computer Science; Must possess one year of experience in job offered or as a Programmer. Employer Paid Ad. Please send resumes to MCDC/ESA, P.O. Box 11170, Detroit, Michigan 48202. Reference No. 202126.

The Gillette Company

INFORMATION TECHNOLOGY . . . . OPPORTUNITIES

The Gillette Company is the world leader in more than a dozen consumer product categories. Global World Class operations are increasingly dependent on Information Technology. Exciting opportunities exist in global business process integration initiatives. We are currently seeking the following highly qualified professionals to join the Gillette IT team in the Boston area.

The following positions commonly require a Bachelor's degree (or equivalent) in Computer Science, MIS, Business Admin., or similarly relevant field, and 3-5 years relevant experience.

! Staff Programmer Analysts

! (SAP) Staff Basis Administrators/Con-figuration-Integration Specialists/ Application Developers

! Data Warehouse Architects/ Developers/Database Administrators

! Telecommunications Analysts

Starting salaries range from $56,100 to $119,000 per year, together with paid vacation, medical, dental, life and disability insurances, and other industry-competitive benefits.

Please email resume to: www.Gillette.Com.

The Gillette Company is an equal employment opportunity employer

Software Eng - for web based, wireless centric applic.s. Design, develop & test (in controlled envts) real time intensive applic.s to meet project specs for transaction process'g. Evaluate system reqmts for enhancemts. Maintain existg & proposed systems. Coord develpmt tasks. Provide on call support to applic.s, systems & prods. Network'g & developg network systems. Bach's degree (or for. equiv.) in Computer Science, Elec'l or Electronic Engrg + 2 yrs exp. Fax resume to (305) 373-5596, Attn: Mr. Baid.

Engineering Technician sought by a broadcast and satellite communications company in Littleton, CO to work in Cheyenne, WY & other unanticipated job sites in the US. Design, install, implement, maintain and modify electronic broadcast equipment including MPEG2 video compression systems. Fine-tune MPEG2 and other electronic systems for video quality; compress video and audio signals into MPEG2 format; complete data encryption on each signal; interface MPEG2 system with radio frequency and broadcast system. Plan and implement networking for broadcast systems; troubleshoot base band system to ensure broadcast quality. Set up and control production and recording equipment for broadcasts; control necessary equipment to regulate transmission of broadcasts. Research and recommend new broadcast and video compression systems. Requires 3 years as a Broadcast Engineer including design, implementation and installation of MPEG2 systems.8am-5pm, M-F; $46,609/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order CO5022623

Prog/Analysts to analyze, design web appls using C, C++, Java, JDBC, UML, EJB, JSP, JMS, XML, JavaScript, HTML, VBScript, etc under UNIX/Windows OS; provide on site maintenance such as debugging, modifications, fine tuning and code optimization. Require BS or foreign equiv in CS, Engg(any branch) with 2 yrs exp in IT. **S/W Engineers** to Design, develop and maintain web appls using C++, ASP, Java, J2EE, Servlets, HTML, JavaScript, JDBC, Oracle, VC++, PL/SQL, Jclass, Pagelayout, XML, XSL, DTD, Jprobe, etc on Windows NT/UNIX OS; provide training and user support for the systems and related application both internally and to clients; debug and modify existing software. Require MS or foreign equiv in CS or Engg (any branch) with 1 yr exp in IT. Highly paid F/T positions. Travel to client sites. Resumes to HR, Fourth Technologies, Inc. 1816 Springdale Road, Cherry Hill, NJ 08003.

Computer Technology Resources, Inc., an IT firm has a continuing need for the following skilled professionals. Candidates must be willing to travel extensively.

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Please send a detailed resume with salary history to Computer Technology Resources, Inc., 14785 Jeffrey Road, Suite #210, Irvine, CA 92620 or email to: CTRCAL@aol.com

Software Developer (Denver, CO) -Design & develop distributed computer software programs in UNIX environment using various software, programming languages & tools, including C, C++, Java, Perl, CORBA, Enterprise Java Bean, DCE, TCP/IP, Socket, Oracle & UNIX development software tools to implement gateway interfaces & access legacy system data & functionality.

MS in Comp Sci/Engineering/ related field + working/theoretical knowledge of C, C++, Java, distributed system programming using Perl, CORBA, Enterprise Java Bean, DCE, Network programming including TCP/IP, Socket, Oracle & UNIX. M-F 8-5, $57K/yr. App. by resume only to: Employment Programs, PO Box 46547, Denver, CO 80202. Refer to job order #: CO5023050.

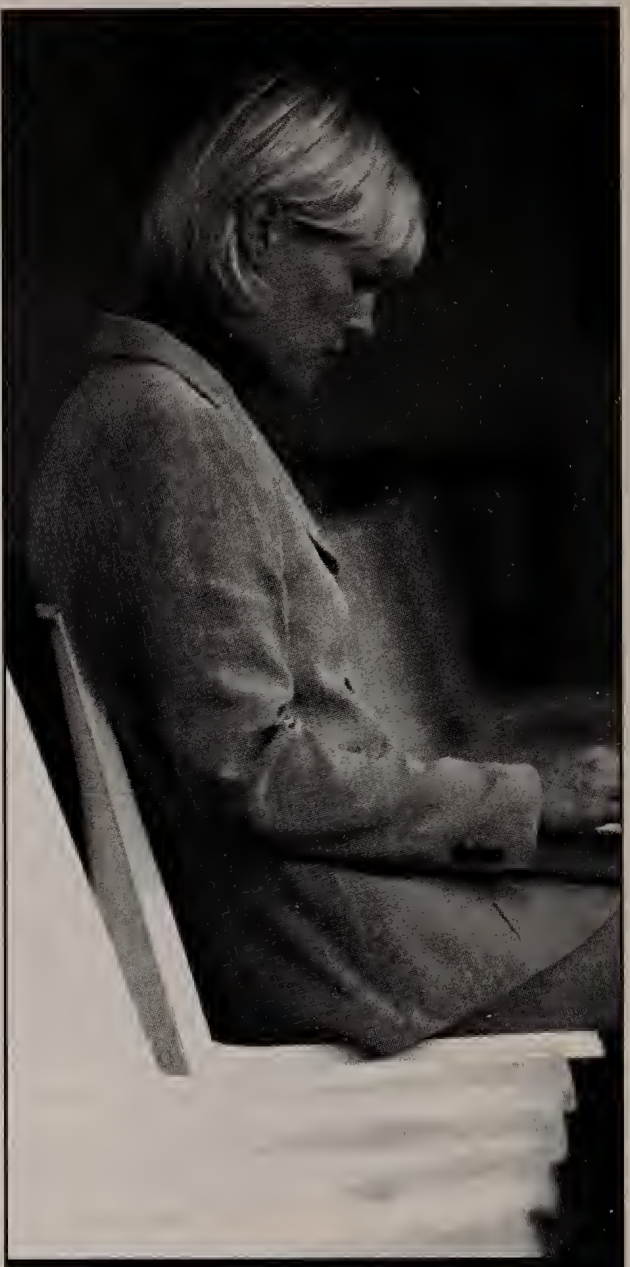
J-Squared LLC has an opening in our Colorado Springs, CO office for a Sr. Software Engineer to, at a senior level, design and develop mathematical algorithms and robotic motion control devices at the 32 bit embedded level. Successful candidates should have a master's degree in computer science, engineering, science or a related field and at least two years experience developing algorithms and C, C++, and Visual C++ based software for embedded software or firmware for image processing, image recognition and robotic control devices. Candidates must also have working knowledge of relational database management systems. Interested candidates should send resumes to Human Resources, J-Squared, 1110-C Elkton Drive, Colorado Springs, CO 80907.

S/W Engineers to lead teams to analyze, design, develop, test, implement, maintain and support client/server, web, wireless applications using XML, WML, WAP, JavaScript, DHTML, JDBC etc; create databases using Oracle, Developer 2000, SQL Plus, etc; trouble shoot in house problems; interact between project members, vendors and customers, recommend upgrades; provide training to end users/ team members. Require Masters or foreign equiv in CS, Science, Engg (any branch) or related field with 3 yrs exp in IT. A BS or foreign equiv in any of the above with 5 yrs of relevant progressive exp will also be accepted. Highly paid F/T position. Travel required to client sites. Resumes to Ordusion Technologies, Inc. 3883 Rogers Bridge Road, Suite 504, Duluth, GA 30097.

Technical Support Specialist: Maintain Computer system files & servers; trouble shoot & expand internal network/work stations; interact with customers to obtain computer graphical files; coordinate e-meetings; install, maintain & implement networking/ servers; provide training. Req.: 2yrs in job offered or 2 yrs in related occupation. Send resume to Stand- out Services #726, 3162 Johnson Ferry Rd. Ste. 260, Marietta, GA 30062. Ref MS

Customer Support Analyst wanted to provide technical support with knowledge in DOE, optimization, approximation, stochastic tools, complex mathematical/statistical equations for users of complex integration/automation/optimization engineering software products using computer-based design codes and engineering design concepts; identify and document software deficiencies. Master's Degree in a relevant engineering discipline with exp. in using computer-based design codes. Please send resume to HR Dept., Engineous Software Inc., 2000 CentreGreen Way, Suite 100, Cary, NC 27513 (or e-mail to jobs@engineous.com).

Java Engineer sought by a Medical Device and Wound Care Company in Princeton, NJ. Must have a Bachelor's degree in MIS or Computer Science. Knowledge of Java, Servlets and JHTML or JSP coding, working knowledge in using UNIX O/S and RDBMS applications using Oracle 8. Familiarity with server-side programming. Send resumes to: ConvaTec, Human Resources, Dept. SD, P.O. Box 5254, Princeton, New Jersey 08543-5254 - **JOB CODE: LK-034.**



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Candidates must be willing to travel & relocate. Send resume to: Recruitment CWW, Infotech Consulting, Inc., 3461 Market St., Ste. 303, Camp Hill, PA 17011; Fax: 717-731-9857; Email: hsingh@icibsl.com. Visit our website at http://www.icibsl.com.

A position is available for a Manager, Systems Engineering in Durham, North Carolina with a software development company. This position will manage the systems engineering department, including coordinating technical expertise with product development to create software deployment packages for use at client sites; managing pre-sale technical calls to clients; facilitating on-site LAN/WAN testing during sales and implementation phases; and coordinating testing of client issues in multiple hardware/operating system environments.
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PROGRAMMER/ANALYST to analyze, design, develop, test, implement and maintain software in a client/server environment for business and financial applications using C++, Visual Basic, ASP, JavaScript, XML, HTML, C # and SQL Server under Windows NT/2000 operating systems. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered or as a Programmer. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: John Brumbelow, CTO, Totalis Consulting Group, Inc., 11030 Jonesbridge Rd., Ste. 203, Alpharetta, GA 30022; Attn: Job RP.

Programmer Analyst II in Cedar Rapids, Iowa:
Design, program, and implement computer systems related to the telecommunications industry. Combine good analytical skills with solid programming techniques to create software solutions. Understand the principles of database design and access. Demonstrate the ability to plan, schedule, and time manage programming efforts to ensure customer requests are satisfied with assigned deadlines. Create software solutions, which meet design specifications. Understand and decipher customer requirements. Participate in the assessment and design of new enhancements to the system. 2-4 years software development work experience. Knowledge and experience with PC development tools is a plus. Telecommunications knowledge and experience is highly preferred. Bachelor's degree in Computer Science or equivalent. Send resume and salary requirements to careers@mcleodusa.com.

SOFTWARE ENGINEERS
required. Design, development and implementation of PeopleSoft and Oracle based client server applications on UNIX and Windows platforms.
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Interested applicants contact McKeesport/Allegheny Cty CareerLink, Attn: JS Supervisor, 345 Fifth Avenue, McKeesport, PA 15132-2600. Refer to Job Order #WEB252785. An Equal Opportunity Employer.

SYSTEMS ANALYST to analyze, design, develop, test, implement and maintain application software systems for the credit card banking industry using Java, RMI, JMAPI, JDBC, JSP, JDOM, C++, HTML, JavaScript, CGI/Perl, JavaBeans, Sybase, Oracle and ClearCase under UNIX operating system. Require: B.S. degree in Computer Science/Engineering, Physics or a closely related field with two years of experience in the job offered or as a Programmer/Analyst. Competitive salary offered. Send resume to: Debra L. Crow, Citibank Universal Card Services, 8787 Baypine Road, Jacksonville, FL 32256; Attn: Job SB.

Software Engineer I in Cedar Rapids, Iowa:
Assist in research, design, and development of software systems for telecommunications industry using scientific analysis and mathematical models. Provide software solutions that meet current requirements while providing flexibility to meet future requirements and system enhancements. Investigate end-user goals, design program, write program specifications, and test application. Plan, coordinate, and management software development team projects including, providing direction to Programmer Analysts to ensure code is being written within specifications provided and consulting with Systems Analysts to ensure operational and performance requirements are accomplished. Present training sessions with users and team members to develop deeper knowledge of McLeodUSA systems and the telecommunications industry. Master's Degree in computer science or related field, plus two years of software analysis and design experience required. Willing to accept a Bachelor's Degree, plus five years of experience in lieu of the Master's Degree. Send resume and salary requirements to careers@mcleodusa.com.

A rehabilitation services company located in Warren, Michigan has 2 openings for system analysts. The positions require a minimum of a bachelor's degree or equivalent in computer science, engineering, or any field with computer courses and at least six months experience as a programmer. Responsibilities include: preparing reports, troubleshooting hardware/software and reviewing computer system capabilities. Send resume: Administrator, Therapeutic Connection Inc., 28111 Hoover Ste 7-B, Warren, Michigan 48093.

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Bugs

nior economist who headed the study. "But software is at the extreme end, in terms of errors or bugs that are in the typical product when it is sold."

The study, the result of 18 months of research including extensive feedback from users, examined the impact of buggy software in the automotive, aerospace and financial services industries and then extrapolated for all U.S. markets. The nonprofit Research Triangle Institute in Research Triangle Park, N.C., conducted the study for the NIST.

One case study in the automotive and aerospace industries involved interviews with 10 software developers and 179 users of computer-aided design, manufacturing and engineering systems and product data management software. Some 60% of those surveyed said they had experienced "significant software errors" in the previous year. The total cost in these sectors from inadequate software testing was estimated to be $1.8 billion.

Similar results were found in the financial services sector, where four software developers and 98 users were interviewed. According to the study, developers agreed that an improved testing system was needed that could track a bug to where it was introduced and show how it influenced the rest of the production process.

Not everyone agrees with the study. Cem Kaner, a computer science professor and attorney at the Florida Institute of Technology, said the report incorrectly blames poor testing for bugs. The problem is software design and development, he said. "Testing will expose a few of the weakness that are left," he said.

But Boris Beizer, an independent consultant in Huntingdon, Pa., said the NIST study is any that has ever been done in pinning down economic cost. Nonetheless, he said software is improving but also getting more complicated, "and that's driven by users."

Beizer said he doesn't believe the study points to a software quality crisis and said the market has forced many lousy vendors out of business. Users' best defense continues to be to "trash the companies that give them bad software," he said.

One vendor said the NIST study isn't taking into account productivity gains from software that's being asked to do a lot more. "They're not giving suitable credit for that," said Chuck Grindstaff, president of product life cycle management products at Electronic Data Systems Corp. in Plano, Texas.

The study calls current testing tools "primitive" and said standards, particularly those that lead to early detection of bugs, could reduce the economic impact by about a third, but it won't eliminate all errors.

"Patches are a hidden tax on users," said Andrew Jaquith, who studies the economic impact of security-related bugs at @Stake Inc. in Cambridge, Mass. The study "puts numbers around the age-old theory that it's better to catch things early than late," he said. ◗

Big Bug Numbers

If consequential costs are considered, software bugs will cost users:

$293B
PER YEAR

SOURCE: STANDISH GROUP INC., 2002

FEDERAL ESTIMATES (annual)

Inadequate testing costs:

Developers: $21.2B
Users: $38.3B

Testing infrastructure improvements could save:

Developers: $10.6B
Users: $11.7B

USERS FIGHT BUGS

Bugs are a part of life for IT managers, but efforts are under way to solve the problem.

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Continued from page 1

WorldCom

tion last year with Web hosting vendor Exodus Communications Inc. and has agreements in place with WorldCom competitors that would keep its service in place without interruption if WorldCom is unable to continue operating.

"We're prepared to react to it if we have to," Sampson said.

Brownlee Thomas, an analyst at Giga Information Group Inc. in Cambridge, Mass., recommended that WorldCom customers who haven't diversified their telecommunications and data networking coverage do so immediately.

Along with the bad financial news, WorldCom announced 17,000 layoffs, and Thomas warned that many more could follow. "I have clients who don't even want to send them an RFP," she said.

"Once you've told a lie like that, how do you ever get that confidence back?" asked Don Carros, an analyst at Meta Group Inc. in Stamford, Conn. "They've got no way to operate in a normal fashion now."

Still, two of WorldCom's biggest customers said they don't expect to defect.

Mike Demeo, a spokesman for The Nasdaq Stock Market Inc., a WorldCom networking customer since 1991, said the New York-based stock exchange has no plans to change any of its WorldCom services, even as it prepares to debut its new electronic-trading floor later this month.

He said Nasdaq does have contingency plans in place in case WorldCom experiences a catastrophic failure. He added that Nasdaq also built some assurances into its contract with WorldCom. "They can't take people off our service without our approval," Demeo said.

The Federal Aviation Administration, meanwhile, runs its air traffic control system over a WorldCom backbone.

Fraser Jones, a spokesman for the FAA, said WorldCom has given the government assurances that its service won't be affected by the job cuts.

Yet the FAA will make a larger statement about WorldCom's service on July 25, when it awards its new data networking contract. WorldCom is vying with Harris Corp., Raytheon Co. and Lockheed Martin Corp. for the contract.

In a webcast statement, WorldCom CEO John Sidgemore said the company would be committed to setting "the highest ethical standards" as it moves forward. Meanwhile, WorldCom sacked its chief financial officer and dropped Chicago-based Andersen as its independent auditor.

Sidgemore also plugged the company's data backbone, which Meta's Carros said he expects will be the center of the reconfigured company. "That network won't disappear," Carros said. "The government probably won't let it disappear."

Despite his confidence that WorldCom's physical network will survive, Carros said he expects the company to file for bankruptcy protection within a month.

Although Thomas said customers need to seek alternate carriers, she noted that the telecommunications industry has been in a deep recession and that competitors such as AT&T Corp. and Sprint Corp. have also been hit hard.

"Those companies aren't going to hire people to take care of you," she said. "They'll try and do more with less."

AT&T declined to comment, and Sprint failed to return calls seeking comment. ◗

TIMELINE OF WORLDCOM'S WOES

APRIL 3 Company announces 6% cut of U.S. workforce, or 3,700 jobs.

APRIL 30 CEO Bernard Ebbers resigns, is replaced by Vice Chairman John Sidgemore.

MAY 15 WorldCom replaces Andersen as independent auditor with KPMG International.

MAY 17 Company delays annual shareholders' meeting from May 23 to June 14.

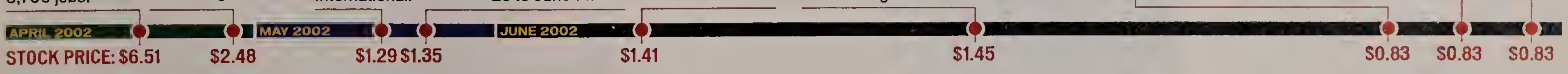
JUNE 5 It announces intention to leave wireless resale business.

JUNE 17 Standard & Poor's lowers WorldCom credit rating.

JUNE 25 WorldCom reveals that it misreported $3.8 billion in expenses in 2001 and early 2002, Nasdaq freezes trading of WorldCom stock.

JUNE 26 SEC files fraud suit against WorldCom.

JUNE 27 The Financial Services Committee of the U.S. House of Representatives subpoenas WorldCom executives for a July 1 hearing.



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THE BACK PAGE

FRANK HAYES/FRANKLY SPEAKING

Don't Shrug Off Bugs

HOW MUCH DO BUGS COST US? This week we have an estimate. The U.S. government's National Institute of Standards and Technology (NIST) released a study that says software errors cost U.S. users $59.5 billion each year (see story, Page One). That's more than Bill Gates is worth these days ($52.8 billion, according to *Forbes*), but it's still only about $200 per American.

Of course, most corporate IT shops won't care.

Then again, the NIST estimate is very conservative — it specifically *excludes* catastrophic software errors that might shut down a business or cost big money in some other way. That $59.5 billion is just the cost of routine work-arounds and corrections by users, along with the added cost of buggy software that had to be fixed late in the development process. The real cost of bugs is much higher.

Most IT shops still won't care.

Oh yeah — the NIST study also calculates that $22.2 billion of that $59.5 billion, or 37%, could be saved through "feasible improvements" in software testing. Not pie-in-the-sky, exterminate-all-bugs campaigns, but practical approaches to catching and fixing bugs sooner in the development process.

Hear that yawn? That's the sound of most of us, still not caring.

And why don't we? We should. We're always hearing from analysts and the boss how important it is to get a return on investment from IT, and how IT's No. 1 goal these days is cutting costs. But we know it's hard to quantify the ROI of having fewer bugs. It's tough to tote up the savings from time *not* wasted by employees using the applications we create.

Now, for once, we've got credible numbers that say we *can* get a quantifiable return if we invest in better ways of writing software. And we don't have to become perfect to get that return. We just have to get better.

And the improved security from fewer bugs? Better customer retention on the Web site because of fewer bugs? Reduced downtime and lower risk of lost data or catastrophic failure due to fewer bugs? We'd get all that, too — along with our share of that quantifiable $22.2 million in low-hanging fruit.

So why don't we do it? It's not that we really don't care. It's that, at a gut level, we don't believe that it's possible, or that it's necessary, or that it matters. We indulge ourselves with the idea that all software has bugs, so trying harder to get rid of them is pointless perfectionism.

Intellectually, we should know better. Our ways of building applications are outdated. They come from a time when users were grateful to have any real-time access to data at all, when customers were insulated from all our systems by at least one layer of employees, when our systems were important but not truly mission-critical — if worst came to worst, employees could keep the business going using pencils and paper.

But now our users just plain can't do their jobs if our systems fail. And we have real, revenue-generating customers using our Web applications and experiencing every error and flaw. And bugs aren't just an annoyance anymore — they're a real threat to productivity and profitability.

Software is ever more critical and ever more complex. And with so much riding on it, we can't afford the bug-ridden way most of us are still writing it. We've got to prevent the bugs we can and catch a lot more of the rest long before the code moves on to QA.

There are lots of ways of doing it: programming in pairs, unit testing early and often, radically increasing use of automated testing tools. There are straitjacket methodologies and lightweight best practices, approaches that will cost a bundle, and techniques that just require a little training and a lot of commitment on the part of programmers.

But none of them will make a difference until we really *do* start believing that bugs matter and that our software has far too many of them — and that they're costing us billions. ◗

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

THIS PC'S trouble ticket says, "Get the bugs out," so support pilot fish pops the case off, powers it up and starts looking for incompatible hardware. "Then I noticed some movement inside the PC," says fish. "The hard drive began to warm up, which was apparently uncomfortable for the cockroaches living in the spaces around the drive. Guess I didn't take the trouble ticket as literally as I should have."

SPOTTING a long trail of ants leading to a PC – "coming in the far window, wandering along the wall, onto a partition, down to the floor, up a table leg, across the table and into a desktop" – programmer pilot fish is about to use anti-ant goo when the PC's owner stops him. "Don't do that," says the owner. "Last month, I spilled a cup of coffee in that machine, and the ants are cleaning it up." Sure enough, three days later, the ants are gone on their own. Fortunately, says fish, "I managed not to have to tell the boss why we were leaving that ant trail alone."

USER AT a remote site reports a dead mouse to the help desk. "I asked the standard questions: What happens when you move it? Is it connected to the computer?" says pilot fish. "The user got more and more agitated and eventually blurted out, 'You don't understand, there is a mouse on my computer, and it is *dead!*' I called the janitor," fish says, "and I'm just glad I didn't get to the question where I ask him whether its bottom looked dirty."

PROFESSOR'S computer won't start, so university IT pilot fish has him bring it in – and spots the problem right away: "There were dead honeybees protruding from the power supply, and equally dead bees all over the bottom of the case and tucked into various nooks and crannies." Seems the prof left the PC running in a chilly remote office and the bees busily chewed through the ceiling to the warm PC and moved in. "At some point, they overpowered the power supply," says fish, "and it shut down."

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The 5th Wave

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"Ooo-wait! That's perfect for the clinic's home page. Just stretch it out a little further... little more..."

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The difference between success and failure is 1/1000th of a second. And with so much at stake, IT managers at SchlumbergerSema can't waste time when it comes to wiring some of the world's largest sporting events.

Which is why they head to best-of-breed vendors. Servers, PC's, printers, routers, switches and databases are spec'd from the usual suspects, but they also need comprehensive management software to tie all of this disparate hardware together. And in one recent case, HP OpenView management software perfectly fit the bill.

The assembled infrastructure handled everything from security check-ins to live time stats to e-mail intranets for athletes, coaches and statistic-hungry media—instantaneously. That meant up to 25,000 different system interfaces, including 10,000 live nodes, all controllable from a centralized mission-critical data center. All told, thousands of workers and millions of viewers had real-time stats, updates and forecasts—the instant points went on the board. (Incidentally, the computer system took care of that too.)

Whatever the event, keeping all these plates spinning is always quite a challenge, and HP OpenView handles it by providing monitoring systems that spot trouble and avert downtime. And with so much always riding on so little time, SchlumbergerSema can't spare an instant for a single system holdup.

HP infrastructure solutions are engineered for the real world of business. Because the last time we checked, that's where we all work.

For more information on how HP OpenView software can keep your business racing along, *call 1.800.HPASKME, ext. 246. Or visit www.hp.com/go/infrastructure.*

Infrastructure: it starts with you.

Bob Cottom
Chief Integrator, SchlumbergerSema

"We have hardware that comes from everywhere, HP OpenView software holds it together."

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